


# MOTOR AGE

Vol. V No. 10

MARCH 10, 1904

Ten Cents



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It shows fewer mechanical changes and contains more features that years of use have proved perfect in practice than any other, and is backed by an unequaled past record—seventeen contests entered—seventeen contests won, with stock cars.

## HAYNES-APPERSON CO.

The Oldest Makers of Motor Cars in America.

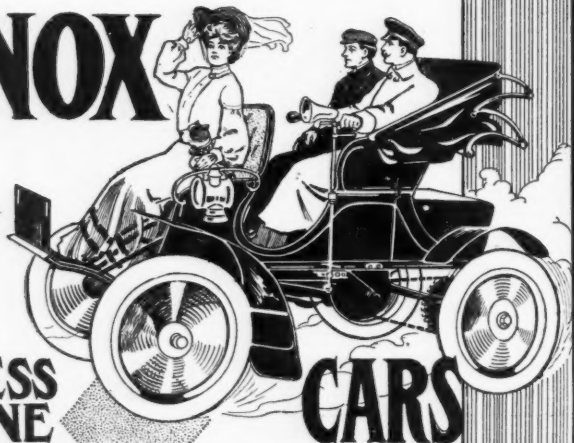
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# A KNOX



## WATERLESS GASOLINE

## CARS

### WEAR LIKE A DIAMOND

THEY COME WITHIN AN ACE OF BEING INDESTRUCTIBLE. THEY HAVE MORE REAL, GENUINE, DYED-IN-THE-WOOL, 24-KARAT EXCLUSIVE FEATURES THAN ANY OTHER MAKE

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Six Styles Passenger Cars and Six Styles Commercial Cars to Choose From

Knox Automobile Company, Springfield, Mass.

Member Association of Licensed Automobile Manufacturers



BOSTON SHOW—Symphony Hall, March 14-21  
Spaces: 10 Main Hall and 23 Corridor

## KNOX 1904

### WATERLESS GASOLINE CARS

ARE BUILT TO GO THE ROUTE  
THEY DON'T HAVE TO BE "TOWED BACK"

They Have The Only High Power Engine Successfully Cooled by Air

From thousands of satisfied users has come the verdict that for speed, endurance, comfort and style the "Knox" leads the world. Six styles Passenger Cars and six styles Commercial Cars to choose from.

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Pittsburg, Louis E. Reineman, 315 Frick Bldg.

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**KNOX AUTOMOBILE CO., Springfield, Mass.**

Member Association Licensed Automobile Manufacturers



# MOTOR AGE

VOL. V. NO. 10

MARCH 10, 1904

\$2.00 Per Year

## BUFFALO SHOW OPENED BY CLUB MEN



**B**UFFALO, N. Y., March 8—Fluttering badges of members of the Buffalo Automobile Club were conspicuous on the city streets yesterday and the friends of the club hurried through their business in order to get home early to dress for the opening of the automobile show at Convention hall at 8 o'clock in the evening. The show had become a reality.

The opening night was designated as club night, and nearly every member of the club was present to participate in the exercises. This is the second annual show under the auspices of the club and it is held this year under the joint management of the club and the Buffalo Trade Association.

Everything was in readiness when the hour for opening arrived. The exhibits were all in place and the exhibitors, looking fresh and vigorous, were in waiting for the throngs of well dressed people which soon filled the hall to overflowing.

The electrical display was magnificent and reminded one of the displays which made the pan-American exposition famous. The decorations of the stands were in harmony and the entire hall presented a scene of beauty.

As the visitor entered the door he was handed a program, the cover design of which showed the favorable conditions toward the automobile in Buffalo. The design represented a buffalo in full stampede, closely pursued by an automobile, which was in turn pursued by a mounted Indian. Both the Indian and the driver of the automobile carried lariats with the evident intention of capturing the buffalo. This honor clearly fell to the occupant of the automobile, and it was demonstrated that the only way to get "a head of buffalo" was to have a motor car—and incidentally to belong to the Buffalo Automobile Club.

The show will last throughout the week, and the indications are that it will be an immense success. Automobile men who attended the show yesterday say it will eclipse last year's exhibition in every way. There is not a vacant space in the building, while last year space could be had almost for the asking.

The George N. Pierce Co. is showing the Great Arrow four-cylinder car, 24.28 horse power, the Arrow double-cylinder, 15 horse power, the stanhope four-passenger car and the stanhope two-passenger car with coupe top, and a stanhope chassis.

The Roe Automobile Co. shows the Peerless touring car and chassis; also the Autocar chassis and a touring car.

The Buffalo Garage, Buffalo agent for the E. R. Thomas Motor Co., exhibits the Thomasine, the Thomas touring car, the Thomas Flyer, with canopy top, and the Thomas Auto-bi.

The Pope-Toledo touring car, in both two and four-cylinder patterns, is exhibited by the Bison Motor Co.

J. A. Cramer is showing the Ford single seat runabout, the Ford touring car and the Ford with a doctor's top. The cars are decorated with blue ribbons, and the show is termed the blue ribbon exhibit.

P. W. Eigner is showing the Belvidere runabout, the same car with a dos-a-dos seat, the Waverley electric runabout and the Waverley stanhope.

The O. K. Machine Co. shows the Red Jacket touring car and an extensive line of automobile lamps, both oil and gas; also horns, as well as Monogram lubricant and a full line of Apple gas engine igniters.

G. H. Poppenberg has the full line of National electrics, the Queen small touring cars, the little Michigan runabout, the Rambler motor cycle and the Dumont touring car, one with canopy and one without.

Flint & Kent have a very attractive line of proper automobile wearing apparel for ladies, including leather jackets, ulsters, dusters, suits, caps, gloves, goggles, leggings, capes, waterproof covers and blankets, all of the French make.

Walter I. Willoughby shows the two models of the Crestmobile. The remainder of this exhibit was not received in time for the opening.

The Electric City Cycle Co. has the Reliance car, the Glide runabout and the Reliance motor cycle.

The Badger Brass Mfg. Co. shows its usual display of oil and gas automobile lamps.

Kleinhaus Co. are showing a very complete line of men's automobile wearing apparel.

W. U. Watson exhibits the Wayne touring car.

The Centaur Motor Co., which has the largest exhibit, is exhibiting eleven cars, among which are the Packard, Gray Wolf, the Packard chassis, the Cadillac, including model B, surrey and the model B chassis. Two models of the Yale are shown, C and B, and the Franklin four-cylinder air-cooled runabout model B with tonneau, and the 24-horsepower

Apperson touring cars. In this exhibit is also the Clement.

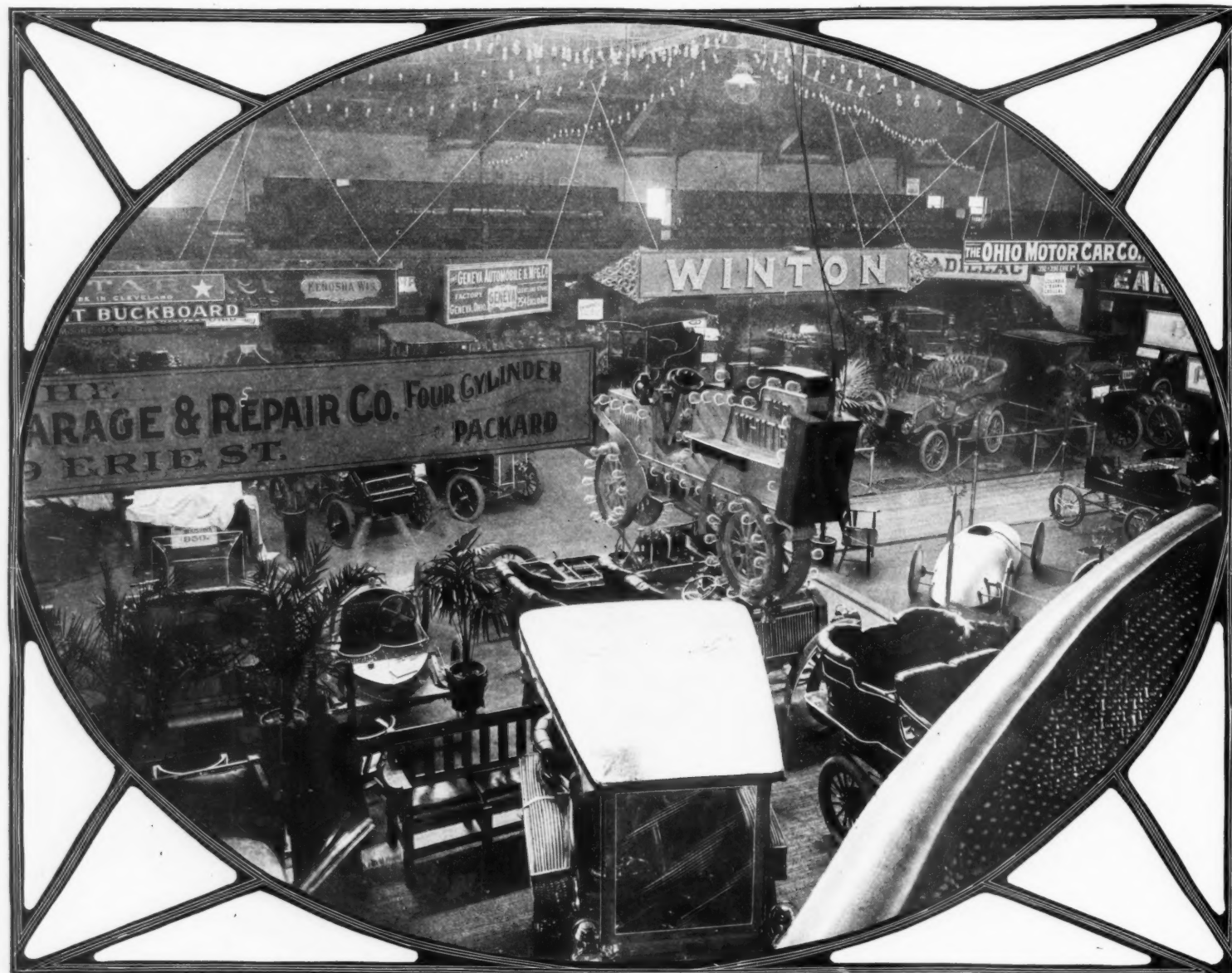
Hafer & Meadows have St. Louis 9-horsepower runabout and two St. Louis touring cars.

The W. C. Jaynes Automobile Co. exhibits the Olds, Olds touring runabout, Olds touring car and Olds railroad car, the chassis of Olds runabout and two Winton touring cars, one with canopy top; also the Darracq and the chassis of the same model.

The Buffalo Motor Car Co. shows a Columbia landau, Columbia victoria, Columbia brougham, Columbia four-cylinder touring car with canopy top, Pope-Hartford car and the

bile lamps; the Prescott Automobile Mfg. Co. shows for its Buffalo agents, the Buffalo Garage Co., two of the Prescott steamers, one with a doctor's top; the Covert Motor Vehicle Co. is showing models of the single seat runabout and a chassis of the same; J. A. Worthington, three models of the Indian motor cycle; Aurora Automatic Machinery Co. two models of motor cycles.

The Standard Oil Co. has a very attractive exhibit of oils for the use on automobiles; the Lackawanna Motor Co. shows marine and automobile engines; Ephraim Bros., the Elmore two-cycle motor touring cars and runabouts.



A GENERAL VIEW OF THE SHOW IN THE GRAYS' ARMORY AT CLEVELAND LAST WEEK

air-cooled touring car. This company is also exhibiting motor boats. The electric display of this company received a great deal of favorable comment, consisting of four large electric signs.

The D. H. Lewis Co. shows a full line of Rambler automobiles, including the model E single seat runabout, model G single seat runabout, model H small touring car, the delivery wagon, model K touring car, and the model L touring car with canopy top.

The Jones-Corbin Automobile Co. shows the model A single-cylinder runabout, the model B double-cylinder runabout and a chassis of the model C, 16-horsepower light car.

The Buffalo Automobile Exchange exhibits an Apperson Bros. touring car, and Haynes-

chassis of the large Columbia touring car.

The Duquesne Motor Car Co. has the Duquesne four-cylinder air-cooled car; Queen City Automobile Exchange three models of the Orient Buckboard and a Knox; Buse Automobile Co. two models of the White steamers with canopy tops, two Northern runabouts, one with canopy top, and a Northern touring car; Alex Weller Co. one model of the Stevens-Duryea; Buffalo Gasoline Motor Co. five models of marine engines, four-cylinder, four-cylinder.

The Nernst Lamp Co. is showing a new electric lamp for commercial purposes for which it claims 50 per cent economy over any incandescent system.

The Twentieth Century Mfg. Co. displays its usual attractive exhibit of oil and gas autom-

The show in every way bids fair to be a commercial success, both for the promoters and the exhibitors. The local club is anxious to make it so for it intends fitting up its club-rooms with the proceeds and is naturally hustling to make the attendance record breaking. If the attendance is good throughout the week as it seems likely to be the exhibitors are bound to enjoy a profitable week for the goods shown are representative lines which have been selling well at all the other shows.

Buffalo has always been a good selling center and the interest in automobiling last year was exceptional for a city of the size. The show promises to inaugurate a season of quick sales and great increase in local enthusiasm in the Bison City.



# SOLD 300 CARS AT THE CLEVELAND SHOW

Cleveland, O., March 7—The Cleveland show, which closed Saturday night, was a record breaker from every point of view. The attendance was much larger than that of the previous Cleveland show and several tradesmen who have followed the circuit of the various shows this year and last, claim that the crowds were larger than at any previous local show. The actual sales during the week eclipsed even those of last year's Cleveland exhibition, which was a tremendous success from a business standpoint.

Treasurer Will Sayle states that nearly 35,000 people paid admission during the week. Friday night there were 6,500 paid admissions and Saturday night 7,500. These figures make no account of the numerous passes that were given out to members of the club, tradesmen from out of town, as well as exhibitors; neither does it include a large amount of "paper" that was placed with Cleveland's swell set for the opening evening.

The actual business closed at the show was something remarkable in view of several conditions that did not exist last year. Last year many agents from the surrounding towns did not close their contracts until they had seen the lines at the show and a considerable portion of the sales last year were to dealers. This year the agents closed early, the majority of them being satisfied with the lines they had last year. As far as the public was concerned, there was more of an incentive to make purchases at the show last year than this, because a year ago manufacturers were far behind on orders and would not agree to make deliveries for from 60 to 90 days, hence buyers placed their orders without delay. This year buyers are aware that manufacturers are in much better shape, and that in the majority of cases agents can make deliveries as soon as the season opens. More cars were shown this year and as the crowds were much larger there was less opportunity of making thorough examinations of the various lines; hence many people made half promises of buying and delayed the closing of the deals until cars could be examined at their leisure and thoroughly tried out. The cold rainy weather prevented many would-be purchasers from securing the demonstrations necessary to convince.

But despite these drawbacks, the actual business was larger than that of last year. A careful estimate made from statements secured late Saturday night indicates that over 300 cars, valued at more than \$400,000, were sold at the various stands. It is safe to estimate that fully twice that number of cars will be sold as the result of the show, because every one present had a large number of promising provisional orders, while the general tone of the inquiries indicates that despite the talk of business depression, the automobile business will be heavier than it was last year.

More high priced cars are being sold than there were last year. The high powered four-cylinder machine, the limousine body and the car with the canopy top have struck the popular fancy and in a great number of cases persons who owned lighter cars last year have bought more expensive cars for this season. Among those that can afford it, the fad for changing cars each season to secure the latest model, appears to be as strong as it was in the old bicycle days. In one instance, the mem-

bers of a family of five, each sold his old machine and bought one of later pattern, apparently with as little compunction as though the machines were bicycles at \$50 each.

Every exhibitor of automobiles at the show reported sales, and some of them claimed to have made so many that they could not figure them up Saturday night, the various salesmen not having turned in their statements.

The Ohio Oldsmobile Co. doubtless had the most sales, as was the case last year. Manager Ralph Owen reported actual orders for eighty-two Oldsmobiles, sixteen Franklins and fifteen motor boats. Thirty of the Olds were the \$950 touring cars and others were runabouts. Three of the motor launches were of the large size, selling at \$550. The total business figured over \$92,000, somewhat smaller than the company's sales last year, but did not include sales to dealers, as was the case then. Neither did it include business done by A. Auble, Jr., the agent from Akron, who made several sales among people from his town; or business secured by Sidney Black, who has a branch store in Cincinnati, who sold several cars to parties from the southern portion of the state.

The Ohio Motor Car Co. did a handsome business, its sales aggregating twenty cars of various makes. Five of these were Columbia two-cylinder gasoline cars and seven were Stearns touring cars. One of the Stearns cars will be a special \$5,000 semi-racing machine to be built for K. V. Painter, a local enthusiast who has dabbled in racing. E. Tom, Fetch, formerly with the Stearns company, is now with the Ohio Motor Car Co. and will pay particular attention to the Stearns line.

The Winton folks were elated over the business they secured. Sales Manager Charles B. Shanks stated that the direct business resulting from the show would easily aggregate sixty cars, although the actual sales at the show were probably not more than one-third that number. The canary finish shown by the Winton company attracted much attention and will be popular this season.

Walter Baker, whose company exhibited through the Price Brothers Carriage Co., states that about fifteen Baker cars of various patterns were contracted for during the week, while the missionary work done would result in a great many more sales. Several of the sales were of the new park surrey illustrated recently in MOTOR AGE. The Baker company already has orders for all it can turn out.

Manager George S. Waite of the White garage admitted that his company had missed it by not exhibiting at the show last year; judging from the results obtained during the past week. His sales aggregated fourteen White steamers, one with a limousine body, eight with tops and four without tops, a handsome total of \$30,000 worth of business.

The Peerless company, which also missed the show last year, was agreeably surprised with the results. It sold ten cars of the four-cylinder pattern, at \$3,500 and upwards each.

Harry S. Moore, agent for the Orient buck-

board, took second place in number of sales. He sold fifty-seven buckboards, a portion of them to dealers in neighboring towns. His Star machine also attracted much favorable comment and he has a good business in sight.

The Royal Motor Car Co., which exhibited through T. C. Whitecomb, sold nine cars, six of the four-cylinder cars at \$3,000 and three of the two-cylinders at \$2,300. Mr. Whitecomb also did a fine business with the Rambler and Ford lines, and William N. Booth & Co., who will handle these lines in the east end, secured several orders.

José Belin, the clever little Frenchman, who, with A. Sopper, conducts the Automobile & Garage Co., expressed himself as "charmed" with the Cleveland show. The company sold five Autocar runabouts, three touring cars, three Packard touring cars, one Waverley physician's wagon and one Waverley station wagon, about \$25,000 worth of business. Before the show it placed seventy Autocars with a number of agents through the state; also several Packard touring cars.

R. H. Magoon, agent for the Pope-Toledo was well satisfied. He sold two \$3,500 four-cylinder cars and two two-cylinder cars.

The Fredonia company, of Youngstown, and the Thomas company, of Buffalo, were both repaid for coming to the Cleveland show. The former reported five sales and the latter six.

Paul Gaeth, with the Gaethmobile, took several good orders, as did Otto Konigsrow with the Ottokar. Seymour Bros., who showed the Michigan, the smallest machine at the show, disposed of three. The Automobile Top & Supply Co. sold several Couriers. Brew & Hatcher, with their new four-cylinder car were not looking for orders, as they claim to have sold their output for this year, but they did not turn away the three or four people who offered to buy. The Geneva Automobile & Mfg. Co. also secured several good orders.

The Bullock-Beresford Mfg. Co., of Cleveland, exhibited a full line of its well known igniters at the show and did an excellent business. The exhibit was completed too late for mention in the last issue.

Emil Grossman, of New York, attracted considerable attention with the new Continental coil which is of the French style. In this coil the secondary and primary windings are both silk covered and the core is made from Swedish iron, which is possessed of high magnetic qualities. The coil is made in all sizes and with ease in any finish. The sale of Continental goods was flourishing.

Thursday evening the hundred or more exhibitors enjoyed a banquet and smoker tendered by the committee in charge of the show. A number of the leading tradesmen made appropriate remarks.

Circus methods were used in cleaning up Saturday night. The band had not stopped playing before things began to fly and before 2 o'clock in the morning five car loads of automobiles were in express cars and headed for Buffalo, where the local show opens today. The Baker electrics were the first machines in place last Monday and the first out Saturday night. They filed out in an orderly manner with the last of the crowd and sped to the station under their own power, a trick which was impossible with the cars that used gasoline, on account of fuel not being allowed in the building.



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## THE ST. LOUIS TOUR

**W**E HAVE had in this country all kinds of automobile contests—track races, road races, straightaway speed trials, endurance tests, brake tests and gymkhanas. All have helped to popularize the automobile, to demonstrate its fitness as a universal vehicle, and the road events have shown the greater necessity for better highways than for better automobiles.

There will be a much different event than any of these this summer, and a greater event than even the mud plugging, water defying endurance contest last fall. It will be a general assembly of automobilists from all over the country at the world's fair in St. Louis. It will be the gathering into one knot ribbons of motoring drawn St. Louisward from the four winds. It will be informal and not for speed. It will be a pleasure affair, and a great demonstration of automobilism in one. It will be an endurance run, in which great numbers will force upon the public the untold possibilities of automobiles in comfortable and convenient road travel over great distances. It will inaugurate an era of cross-country travel by public highway in preference to travel by steel rails. It will be a national experience of the difficulties in the use of poor roads and of the blessings of good roads.

All this is a great undertaking, but a perfectly feasible one on account of its informal character. Motorists by scores, hundreds and thousands simply set their eyes on St. Louis and turn their steering wheels toward the chosen Mecca. In long, winding strings they make their many courses over the land, and with but a lenient schedule to govern their moods drive in their own way, at their own sweet will to the capital of 1904 American motoring.

The scheme is immense in its very simplicity. None of the fever of a contest to mar the strict enjoyment of the trip and none of the bustle and nervous tension of an affair of sporting consequence to make it a hardship. By devious routes and in parties great and small the country's enthusiasts will all head for a fixed point, and in their travel show the whole wide world that for getting overland to any place under normal traveling conditions there is no surer, safer, or more enjoyable way than that of automobilism.

An endurance run shows what can be done under stress. This projected St. Louis tour will show exactly what automobilism is when undertaken in the way that the average person wishes to participate in it. This demonstration of motor car utility is bound by the nature of the event to be impressed upon many times the number of people than would the results of a set contested over one course. Being spread over the whole country, it passes through thousands of cities, towns and hamlets whose people cannot fail to note its progress. It strikes the territory of every newspaper east of the Rocky mountains, and makes good news matter for each. A procession of signboards could not better advertise the American automobile than will this gigantic pleasure party.

The walls of the Mecca in sight, the presentation of the performances of the hundreds of varieties of motor cars which have made the trip will be gorgeous in its spectacular trimming. These cars have come over dirt, mud, gravel, macadam and corduroy from eastern, New England, central, southern, southwestern, western, northern and northwestern states. The papers and the people's mouths have been full of their coming. They are here. They mass in one great cavalcade and to the tune of their mighty united sputter march to the world's fair. Little else in the line of a spectacle will be worth seeing in St. Louis that day.

Nor is the spectacle, the triumphal entry to the objective city, the end. Once the attention of the whole town and its many visitors gained and whatever sporting events, assemblies and tournaments crowd the next few days, cannot fail to arouse and sustain a great interest, which will be everlasting in its effect upon motoring and kindred interests.

The success of the enterprise is assured from the start if sufficient numbers are assured. It is up to the automobilists of the country to make its success by making its numbers. It is no factional affair. It is to be the co-operative event of all motoring organizations of all classes of automobilists. Each section of the country should make a strong representation. The call for participants is made to all. Let all who possibly can become a part of it.

## UNIVERSAL CHASSIS

**I**N a way the motor car industry is outstripping itself. It has been so successful in showing the public the advantages of the automobile as a new vehicle that it has brought about the creation of a public demand for automobiles as substitutes for horses and carriages as well as for additions to the older means of road travel. The public wants automobiles for all purposes. The demand is not limited to cars to be used as novelties in whatever shape they may come. There is a persistent and growing call for motor vehicles adapted exactly to certain conventional purposes.

The world is tired of the horse. It is not tired of runabouts, victorias, broughams, theater busses and coal wagons. It needs them all. They will some day all be propelled by motor. It is in the adapting of the motor car principle to all of the thousand and one specific purposes that the motor trade has ahead of it a bigger possibility, a bigger demand and a bigger task than the present condition of the trade suggests.

The distinctive automobile as a class vehicle cannot last long. Its successor is the car named by its purpose, not by the character of

its motive power. This car may be built for its purpose from the ground up and it may be built for its purpose only from the chassis up. A freight truck chassis would not serve well to carry milady's victoria. But there are numerous styles of carriages which a man may wish in his stable that may all be very well attached to the same running gear.

The number of different kinds of vehicles that must be provided to make the motor universal will be great. They are divisible in groups and the number of these groups need not be great. Each group would represent a distinct model of chassis. The number of chassis which the industry called upon to furnish the vehicles will have to make need not, then, be great.

There is a great field for the designer in this grouping of vehicles and the adapting of different chassis to the interchangeable body structures of each group of vehicles. It is both interesting and commercially profitable. It represents economy both in the use and in the manufacture of vehicles for all purposes and for all people.

❖ ❖

Is the road subject a dry subject? The roads themselves were none too dry for those who made the endurance run last October. The same roads are there today; no better and no worse than thousands of miles of other roads in other parts of the country. They are dry and dusty in summer, soft and soggy in spring and fall and rough the year round. Shall we take up this proposition in a brave and manly fashion or shall we shrink from it in dismay and leave it for the accomplishment of a later and a more worthy generation?

❖ ❖

Some of the automobile trade journals of England are complaining because royalty does not officially recognize the Crystal Palace show, saying that the British car is ignored and treated as of no account by the powers that be. These editorial writers should cheer up. America has no royal family to boost the industry along, and even the president isn't making any strenuous efforts in an automobile way, but regardless of being thus handicapped the American manufacturer is trudging along pretty close to the head of the procession.

❖ ❖

The automobile technical writer of the New York Herald has competition. This is from a 'Frisco newspaperman's nimble pen: "The A. A. Moores have a beautiful auto—by the way, we must all change that word to 'motor car'; it is the latest thing and used in the east and in England. Well, the Moores' motor car is a very large, improved affair with a glass in front which cuts the wind. Many of their friends are afraid to go out with them in it, lest in case of an accident the glass might cause frightful damage."

❖ ❖

The Automotor Journal, of London, England, publishes pictures of "the Ormond-Daytona beach races held recently on this Californian beach." If the Automotor Journal will consult its geography it will discover that Ormond is "bloody near 3,000 miles from California, bli-me!"

❖ ❖

The automobile industry has caused more than one turn-over of technical ideas. The increasing use of the make and break form of ignition is but another example of the rapid changes that occur in our notions of what is right and what is wrong.





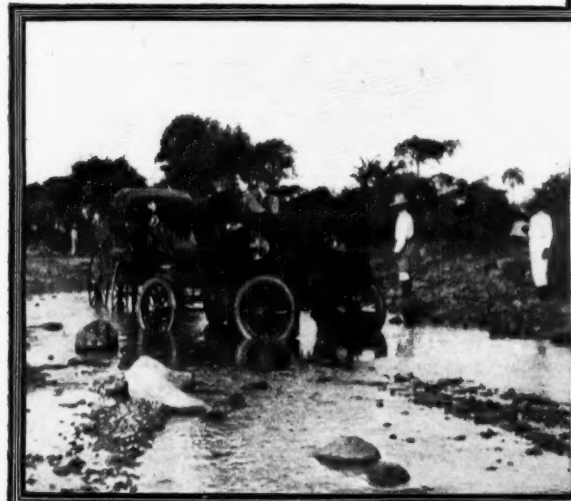
## AUTOMOBILING IN MOUNTAINOUS PORTO RICO



The Pictures Are by C. H. Martin,



An Enthusiastic New York Motorist,

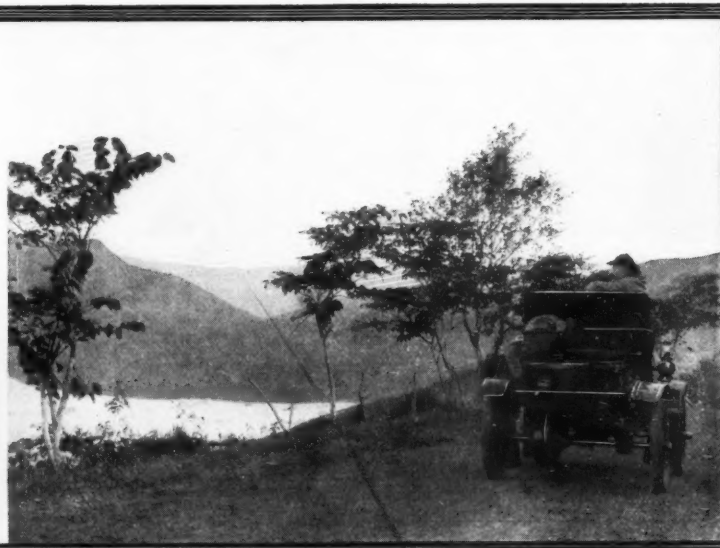
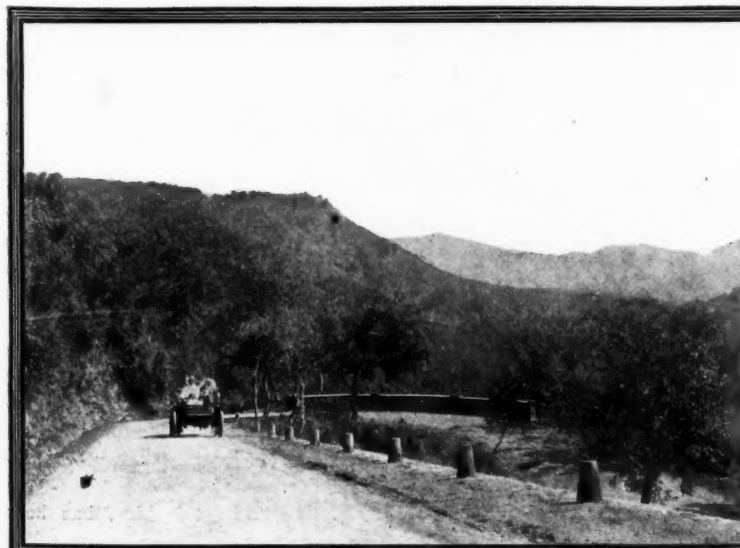


Who Has Recently Been Touring the

Island With a "Waterless" Knox Car



## SCENES ALONG THE MAGNIFICENT MILITARY ROAD



## REEVES AGAIN MANAGER

### Empire Track To Be Under His Management—Big Events Already Planned—Racing News

New York, March 6—Alfred Reeves has again consented to accept the secretaryship of the Empire City track, though he will continue his present connections, embracing trotting, bicycle and automobile lines. The assumption of the management by so great an enthusiast over automobile racing as he is assures another series of high-class tournaments at the track, and at the Brighton Beach track also, which is practically now, so far as trotting and automobile racing goes, under the same control as the Empire course.

"I propose to run frequent meets at the track," said the hustling secretary. "The financial success of those of last season justifies their promotion along the same liberal lines. There are some drivers who think they can beat Oldfield and some makers who believe they can produce a faster machine for the track than the Winton Bullet. I am going to give them all a chance to prove it.

"When the question of the championship of America is settled I will then look to the other side for some one to put against him. The winner of the international cup race would be naturally the man most sought. I see Lam-berjack talks about coming over with a Clement racer. So much the better. He will be accommodated with a match and so will Edge and Jarrott, who are reported to be intending to come over also.

"I am a great believer in track racing. It best furnishes the 'personal equation' we hear so much about. In a track race, if the machines be anywhere near evenly matched, barring accidents, the best driver will win. We will probably give our first track meet on Decoration day. I expect that the mile and other records lost by Oldfield's performances in California will easily be regained this season, and that once more the Empire will prove itself the record track of the world for automobiles, as it is for trotters."

A party of automobile racing experts, embracing Chairman Pardington, of the racing board; Secretary Butler, of the A. C. A.; several well known drivers and cars, and reporters identified with the sport, will leave for Virginia Beach Friday for a 2-days' inspection of the course, with regard to determining its availability for the international team trials and the proposed racing tournament in May. Alexander Fischer has placed a Martini at the disposal of Chairman Pardington and Secretary Butler. It is probable that the speed possibilities of the 70-mile stretch of beach will be tested by F. A. La Roche with his Darracq, "Blue Streak," Harlan W. Whipple with his new Baltimore built flyer and L. P. Mooers with one of the Peerless cars.

All friction between the Norfolk clubmen and the Virginia Beach Automobile Club is said to have disappeared. The former will promote local meets and the latter the big national tournaments. The Norfolk club will run a meet in April and May 9 has been set as the date for the Virginia Beach club's opening tournament.

Manager Lee Strauss is said to have found a building with 43,000 square feet of floor

space and intends to promote an automobile show in it during the racing week. The aggregate neighboring population is large. Baltimore and Washington are but a few hours' ride away and New Yorkers can get to the beach in a night's ride, by sea or railroad. The whole idea is to give the southerners a monster demonstration of the automobile's speed and practicability.

The A. A. A. racing board has taken official cognizance of the fact that F. A. La Roche, in driving his Darracq 5 miles in 4:01 in the first trial heat of the 5-mile open at Ormond scored a world's record for cars under 1,800 pounds, supplanting the 4:21 3-5 made by the Packard Gray Wolf over the same course this winter, and allowed the record.

Chairman Pardington has little doubt that he can gain the permission of the authorities of one of the Long Island counties for the 300-mile race for the cup W. K. Vanderbilt, Jr., has offered the A. A. A. The new automobile law legalizes speed contests on the road when the permission of the local authorities is secured. Mr. Pardington has written the members of the new board with a view to learning their convenience with regard to a date for an early meeting, at which a revision of the rules may be discussed and the season's campaign laid out.

The story of Barney Oldfield having arranged to race H. L. Bowden and S. B. Stevens at the Readville track, Boston, on Decoration day, finds small credence here. There was such a bantering talk of this character between the American champion and the Mercedes drivers at Ormond, but it was nothing more than an exchange of "jollies." It is not believed that either Mr. Bowden or Mr. Stevens has any track racing ambition. Some of the critics say that the rigidly built Mercedes cars are not well adapted for track racing anyhow.

It is reported here that the E. R. Thomas Motor Co., of Buffalo, N. Y., is to enter the track racing game with a high speed car.

#### WILL MAKE A TEST CASE

A petition has been filed in the superior court of Massachusetts by Harry L. Radford against the commonwealth, to determine whether the state is liable for \$1,200 repairs he had to make on his automobile which ran into a wooden horse at Cherry Valley at 4 o'clock on the morning of October 23, 1902. Radford, his wife and two sons were on a tour from New York to Boston, traveling day and night. The state highway between Worcester and Leicester, through Cherry Valley, was being resurfaced, and a wooden horse, on which was a lantern, had been placed across the highway to prevent travelers from getting upon the torn-up roadway.

Radford claims that at the time he reached the place there was no light burning to warn him of the unsafe condition of the highway, with the result that his automobile ran against the wooden horse, damaging the car to the extent of \$1,200. The commonwealth put in evidence that the lantern had been lighted that night, and it claimed that its legal duty ended when it furnished a lantern properly lighted, and that it was under no obligation to keep watch to see that it was kept lighted throughout the night.

The English local government board is trying to impose a speed limit of 7 miles an hour for automobiles which weigh over 2 tons when empty.

## SYRACUSE CLUB PROSPERS

### Big Smoker and Lantern Slide Exhibition—State Association Will Establish Headquarters

Syracuse, N. Y., March 7—The Automobile Club of Syracuse held a smoker last Thursday evening at the Yates hotel. It proved one of the most enthusiastic gatherings ever arranged by the organization. Thirty or more of the members enjoyed themselves in an informal way, dividing their time between a Dutch lunch and a lantern slide exhibition, showing everything from some exceptionally clear reproductions of the automobile races at the state fair last year to a number of well known local characters. A large number of the slides depicted New York roads—good, bad and indifferent—a subject dear to the heart of every automobile enthusiast. Harry C. Pierce, chairman; Carl Amos and Winfield Chapin, comprised the committee having the smoker in charge.

The business meeting was a record breaker in point of initiation, sixteen new members being added to the roll. The new men are: B. Lyman Smith, W. S. Peck, Jr., Hendrick S. Holden, Fred R. Peck, John F. Huber, Ross L. Andrews, Frank A. Barton, Giles H. Stillwell, A. G. Bolster, G. E. DeLong, Frank M. Kinney, Spencer C. Crane, William H. Bissell, Albert E. Petrie, E. H. Dann, of this city, and Theodore Coles, of Oneida, N. Y.

Willet L. Brown, president of the club, gave a report of his recent trip to Albany with Attorney Giles H. Stilwell and Secretary Frederick H. Elliott, as representatives of the local club at a hearing on the Hill-Hotchkiss-Cocks bill, and in his opinion said the measure is almost certain to become a law. The bill at present is up for a last reading in the assembly and is expected out of the senate committee at most any time.

C. Arthur Benjamin, who acted as the club's representative at the annual meeting of the American Automobile Association at Chicago during the automobile show there, also gave a detailed report. He told of the success of the Chicago show and of the matters acted upon by the association. Secretary Elliott was re-elected the Syracuse club's director to attend the meeting of the New York state association and Hurlbut W. Smith was named alternative.

The board of directors of the New York State Association of Automobile Clubs will hold its first annual meeting at the Yates hotel, this city, March 19. The board comprises eleven members, one from each club in the association. The matter of establishing state headquarters here between the months of May and November will be brought up for discussion and the probabilities are that the plan will be adopted. This action is advocated because of the central location and the large amount of business that will accrue in the office of the secretary and treasurer, Frederick H. Elliott, in connection with the club runs that will be made to the St. Louis exposition from all parts of the state.

Frederick H. Elliott, of the Century Motor Vehicle Co., has gone on a western trip, during which it is said he will confer with manufacturers of automobiles relative to interesting western manufacturers in the making of automobiles in this city.

Hurlbut W. Smith, of this city, has been



appointed one of the committee which will have charge of the Automobile Club of America's tour to St. Louis, beginning July 26. Mr. Smith will have charge of the run between Albany and Buffalo.

Mrs. Hubert VanWagenen, Jr., of New York city, daughter of Mr. and Mrs. James Stevens, of Rome, N. Y., has gone abroad to meet her husband, who is in France. They will meet at Paris and will go on an automobile trip through Southern France and Italy, returning to Paris. They will return to this country in September.

#### VEHICLE TESTS FOR PARIS

Between August 22 and September 4 the Automobile Club of France will hold a vehicle test competition which is expected will be the greatest of its kind yet held in France. There will be three distinct events, the first being reserved for commercial cars, the second for electric touring cars and the third a competition in controlling engines.

The commercial vehicles will be divided into two classes—those for rapid transportation, carrying from 1,650 to 2,000 pounds load forming class A; class B will be formed of heavy trucks, carrying more than 2,000 pounds load. Class C, third class is for the electric touring cars.

The distance to be covered every day by the vehicles of class A will average 80 miles, while 43 miles will be the daily average run for the vehicles in classes B and C. Those of the last named class will recharge every night at the stopping station. The competition for automobile control includes the distance covered and the speed at which one drives.

The program for each day is as follows: First and second day, consumption test around Lake Daumesnil, Paris; third day, Paris-Rheims run, to be made in 1 day by cars of class A, and in 2 days by the others; fourth day, Rheims-Mezieres run for class A vehicles and Rheims-Vervins run for those of the other two classes; fifth day, Mezieres-Valenciennes run for class A and Vervins-Valenciennes for classes B and C; sixth day, Valenciennes-Lille for all the cars; seventh day, show of the cars at Lille; eighth day, Lille-Arras; ninth day, Arras-Amiens; tenth day, Amiens-Rouen for class A and Amiens-Beauvais for the others; eleventh day, Rouen-Paris for class A and Beauvais-Paris for classes B and C; twelfth day, consumption test around Lake Daumesnil, Paris.

#### AUTOMOBILE SERVICE IN CONGO

The administration of the Congo Free State, Africa, has inaugurated an automobile transportation service from Lemba, near Matadi, to Songolabo, a distance of nearly 220 miles. Another road, 500 miles long, consisting partly of water ways and partly of automobile service, will permit one to reach the Nile. Automobiles are used over nearly two-thirds of its total length.

Steam vehicles have been used, but, while giving fair service, are too heavy, often sinking into the ground. Experiments have demonstrated the fact that these cars should not weigh over 4 tons. A new style of car with flash boilers has been tested during several months in Belgium, where it has given good results and will replace the car now being used. This vehicle weighs only 2 tons, when fully equipped, and is able to carry a load of 4,400 pounds.

## SEEK ROAD INFORMATION

### Congressmen Becoming Interested In the Matter of Highway Improvement and Ask for Figures

Washington, D. C., March 5—A resolution has been introduced in the house of representatives by Representative Wiley, of Alabama, to the effect that the secretary of commerce and labor be authorized and directed to have the director of the census investigate the subject of public-road construction in the United States, and to obtain and compile all available statistics from the different states, counties, and municipalities which may tend to show the cost of construction, as well as maintenance, of roads built under legal authority during the past few years, and also the amount and character of the indebtedness thereby incurred, when and how payable, and to ascertain the states whose constitutions prohibit them from engaging in works of internal improvement, as well as those which permit them to authorize the issue of bonds for the construction of highways. When the investigation is completed the statistics compiled are to be published in the form of a bulletin, for the information of the public, in connection with the bills pending in both houses of congress looking to a uniform system by which better post-roads will be constructed throughout the country, and more efficient mail facilities thereby furnished to the people.

More than ordinary interest attaches to the proposed investigation and the results cannot fail to interest all who are striving for the betterment of American highways.

An interesting question has recently been brought up regarding the right of Representative Brownlow, author of the bill now pending in congress appropriating the sum of \$24,000,000 to improve the national highways, to use his frank in sending good roads literature throughout the country. Some of the good roads speeches that have been made in congress this winter have been printed in pamphlet form for distribution generally, one page of the pamphlet being devoted to a cartoon depicting a horse struggling through a muddy road and pulling a small load, which could be pulled with ease over a decent road. As this cartoon was not a part of any of the speeches in question and has never appeared in the congressional record, it would appear that it is unfrankable. Representative Brownlow has referred the matter to the postoffice department for its ruling, as he does not wish to violate the postal laws in furthering the good roads question, a question that is very dear to his heart. The outcome will be awaited with interest.

#### HORSEMEN CHANGE HEART

There is a possibility that the race meet on Decoration day at Readville, Mass., may be abandoned by the Massachusetts Automobile Club. The racing committee of the club had planned a meet for that place on that day, but circumstances have arisen which make it seem doubtful at present.

The club has had an option on the track since last year, but there was much opposition on the part of some of the members of the New England Trotting Horse Breeders' Association to allowing an automobile race on it. The late J. Malcolm Forbes was one of those most op-

posed, and he was away when the option was given. He was much displeased when he learned that a race meet was to be held and it is a question now whether or not the directors, out of a matter of sentiment and respect for the wishes of Mr. Forbes, will allow an automobile race meet to be held on the track.

Another fact which raises a doubt as to the meet being held at all is that another organization is thinking of running a race meet on that day and this would naturally cause more or less friction.

#### HOPE TO IMPROVE CHICAGO STREETS

Chicago, March 8—An aggressive campaign will be made this spring by the good roads committee of the Chicago Automobile Club in its effort to better the conditions of the streets of the city and the roads of the surrounding territory. Chairman Sidney S. Gorham has suggested several improvements and these will be taken in hand and vigorously promoted by the club. A tour of inspection will be made by members of the good roads committee, accompanied by a photographer, and pictures of the bad spots in the streets will be taken and submitted to the city authorities as an object lesson in road making.

The membership of the Chicago Automobile Club is increasing in a manner eminently satisfactory to the officials. There are now almost twice as many members as there were at the beginning of the year and applications are being filed daily. The older members are becoming aroused and are soliciting their friends to join and help the good work along. The listless, sleepy air of ancient respectability that formerly hung around the club house is all gone, and instead there is the busy activity characteristic of Chicago. Every day sees an increasing number of the members gathering at the club during the luncheon hour, and in consequence members who knew each other by name only are now becoming personal friends. These daily meetings are stimulating in an automobile way, and assist in bringing out the ideas of the different members regarding the betterment of the club. President John Farson has been out of the city for a fortnight, but will return the latter part of this week, and early next week a conference will be held with the law department of the city, at which an ordinance governing the driving of automobiles will be prepared.

#### OLD ORDINANCE REVIVED

The automobilists of Los Angeles, Cal., have suddenly discovered that it is a crime and misdemeanor, according to the laws and ordinances of that city, to permit any vehicle to stand unhitched more than 20 minutes within the corporate limits. It was at first supposed the ordinance referred only to vehicles drawn by horses, mules, asses or oxen, but a recent more careful scrutinization reveals that all vehicles, whether drawn or driven by any of the aforementioned animals, was subject to its jurisdiction. Therefore, the Automobile Club of Southern California called a special meeting last week and, in convention assembled, requested the city authorities, if they would be consistent, to enforce all ordinances on the statute books. As there are quite a number which have been suffering from innocuous desuetude, it is probable that the automobilists will not be compelled to procure halters for their automobiles when they drop in at the corner grocery to buy gasoline and get the latest market price of eggs and butter.

## RAISE GARAGE PRICES

### Hartford Dealers Figure They Have Been Doing Charity Work Long Enough - Other Abuses

Hartford, Conn., March 7—Garage managers plan to get together during the coming week with a view to raising the price of storage. The three leading garages of the city have been charging \$10 a month for care of vehicles and storage, with \$5 a month for dead storage. None of the garage proprietors have made any money on this basis and the only remuneration has come in repairs. With the perfection of automobiles and the less likelihood of repairs, it has been thought necessary to raise the price to \$15 a month, which is about two-thirds of what the same service costs in the larger cities. One garage proprietor has so far stuck out for the old rate, but it is now thought that he will fall in line with the movement.

Hartford automobile agents are endeavoring to correct the demonstration nuisance, which assumed large proportions last season. It has been difficult to choose between the possible customers and the seekers after free rides. Agents will continue short city demonstrations without price to those whose ability to pay for a vehicle in the event of liking it well is indexed in their apparel. Long demonstrations to nearby cities making runs of 75 and 100 miles are to be charged for at livery rates, which charge will be remitted in the event of a purchase. In this way the Hartford dealers think they will do away with the idlers who are only looking for a free ride.

F. L. Caulkins, of Middletown, drove a Knox car from Springfield to his home city last week when the snow was heavy and the roads were but poorly broken out. One wheel ran in the sleigh track, but the other plowed through the snow for 26 miles, tiring machine and driver alike. The run to Middletown, 18 miles, was accomplished easier, but the trip was a hard one. Nevertheless it was made in fairly good time and Mr. Caulkins says the car behaved beautifully.

S. A. Miner has opened his new station, in which he has three times the ground floor space that he enjoyed formerly with four floors of the same size above. Forty cars are now quartered on the main floor, the repair departments being on the floor above. Captain Miner has made delivery of Knox and Olds cars and has a couple of cars of the latter en route.

Frank Bradley, who has been the agent of the Peerless car in southern New England for two seasons and who has toured all over New England selling cars, has resigned his post to join the selling force being banded together by Manager Frank Fanning, of the Chicago branch of the Electric Vehicle Co.. Mr. Bradley is a motor car driver to whom some one has yet to tell him what fear is, and he has been a successful salesman.

### PARTS MEN ORGANIZE

The Parts and Accessory Manufacturers' Association was organized in Cleveland last week, the object being the protection and promotion of the mutual interests of the trades concerned, and of the automobile industry generally. About fifty makers were present at the meeting. The constitution and by-laws were submitted and a vote on its adoption will be taken

by mail. The officers and directors elected are as follows: President, D. J. Post, Veeder Mfg. Co., Hartford, Conn.; first vice president, Howard E. Raymond, B. F. Goodrich Co., Akron, O.; second vice president, H. W. Chapin, Brown-Lipe Gear Co., Syracuse, N. Y.; third vice president, Phineas Jones, Newark, N. J.; secretary, F. E. Castle, Twentieth Century Mfg. Co., New York; treasurer, W. S. Gorton, Standard Welding Co., Cleveland, O.; directors, H. T. Dunn Fisk Rubber Co., Chicopee Falls, Mass.; H. H. Timken, Timken Roller Bearing Axle Co., Canton, O.; H. O. Smith, G. & J. Tire Co., Indianapolis, Ind.; R. H. Welles, Badger Brass Mfg. Co., Kenosha, Wis.; P. L. Hussey, Hussey Drop Forging and Mfg. Co., Cleveland, O.; F. C. Billings, Billings & Spencer Co., Hartford, Conn.; V. G. Apple, Dayton Electrical Mfg. Co., Dayton, O.

### NEW TRACK IN NEW ENGLAND

Boston, March 6—W. J. Morgan passed through Boston yesterday, after having completed arrangements for the construction of a 2-mile automobile race track in the Bretton woods, at Fabyans, N. H. The track is to be 80 feet wide on the stretches and 100 feet wide on the turns, and banked 20 feet. It is estimated that it will cost something like \$30,000 and is to be ready for use by July 1. Inside the automobile track is to be constructed a mile horse track, on which running and trotting races can be held. The track will be used for racing beginning July 11, at which time a national hill-climbing contest is to be held at Mt. Washington, the track being a part and parcel of the hill-climbing proposition. The holding of a hill-climbing contest at Mt. Washington was being considered by several local men, and six machines had been entered for a private trial to be held in July. Anderson & Price, the hotel proprietors of Ormond, Fla., are backing the enterprise, so there is no question that the hill climb will be as successful as was the racing at Ormond, the idea being that the same capital behind this latest scheme is the same as that interested at Ormond.

The interest in the automobile show which opens Monday next is at fever heat, and the indications are that it will be equal to the Chicago and New York exhibitions, even though the hall space is not so great. This is made possible owing to the provision that calls for the display of but one machine of a given model, so that while the show may be lacking in number the quality will not be overlooked.

### GOOD WEATHER IN CAPITAL

Washington, D. C., March 5—A few days of good weather has worked wonders for the automobile trade of this city. The dealers accomplished more during the past week in the volume of business transacted than at any time since the beginning of the year, and the general impression is that this is going to be a record-breaking year in the way of sales. Several carloads of automobiles were received here during the week and at the present time the trade is prepared to meet almost any demand.

A fine display of automobiles is to be found at the local salesroom of the Pope Mfg. Co., on Fourteenth street. The full Pope line is shown, together with the Cadillac and Waverley electric. A carload of Cadillacs was received during the week and a carload of Toledos is on the road.

## CUSTOMERS PAY FREIGHT

### Excessive Carrying Charges Put On the Purchaser—Matter Being Investigated by N. A. A. M.

New York, March 6—The complaints as to excessive and unfair discrimination by the railroads against automobiles in the matter of freight rates, referred to in a recent dispatch to MOTOR AGE, have been referred by the N. A. A. M. executive committee to a special committee composed of J. Wesley Allison, W. R. Innes and R. D. Chapin.

An automobile which was previously rated at 4,000 pounds, is now classified at 6,000 pounds minimum. At the same time the carload minimum has been reduced from 10,000 to 8,000 pounds. This would make the approximate rate of shipment of a car from Chicago to New York, \$50. It now costs as much to send an automobile to California as it does to ship it to Australia by way of England.

The purchaser of an automobile in Boston will hereafter have to pay the freight from the factory, according to the new rule adopted by the dealers of that city. This move was caused by the advance in freight rates made January 1, which made the freight on automobiles twice as much as it was before that date.

Under the new classification, which went into effect the first of the year, automobiles were changed from third to first class. This advanced the rate about 50 per cent. The system of billing was also changed. Automobiles had formerly been billed at a minimum weight of 4,000 pounds, but hereafter the minimum will be 7,000 for crated or boxed machines, or 8,000 pounds for uncrated machines. This again increased the rate, making the total of 100 per cent increase.

The Boston Dealers' Association took up the matter and after some discussion it was decided to let the customer pay the freight, so the following notice was posted at the stores of fifteen dealers:

"The terms for all automobiles being f. o. b. their respective factories, we, the undersigned, members of the Boston Automobile Dealers' Association, agree to sell cars at list prices plus the freight charges from factory to Boston."

This was signed by Harry Fosdick, Winton; A. E. Morrison, Peerless; Fred Randall, Stevens-Duryea and Clement; Reed-Underhill Co., Knox; E. A. Gilmore, Rambler; George Neth, Electric Vehicle Company; W. E. Eldridge, Pope lines; J. H. MacAlman, Locomobile; George H. Lowe, White; A. R. Bangs, Franklin; P. A. Williams, Ford; C. S. Henshaw, Thomas; Dowling & Maguire, Pierce; Rossell Drisko, Walter; Moore & Smith, Autocar.

### ANOTHER FOREIGN CAR

New York, March 6—The first of the "V. & D." chassis, whose agency for this country has been taken by the Central Automobile Co., will be out of the custom house this week and placed in view at the company's garage at Broadway and Fifty-third street. It will be of 14-18 horsepower and sell for \$4,500. A 20-24 horsepower chassis will also be imported, whose price is \$5,600. These cars are built by Vinot et Dequingand, at Puteaux, France.

The catalogue specifications follow: The motors are of the vertical type, jump spark,



all valves mechanically operated and interchangeable, centrifugal governor acting on drum throttle. The governor is so exactly adjusted there is no racing of the motor should the clutch be thrown out at any speed.

The cam shaft gear and distributing gears are enclosed in the center of the crank case, thereby eliminating all noise, being free from dust, etc., and also acting as splash feed for the crank case. Cooling is by tubular radiator, placed in front of the motor and by positive drum pump of large volume. The carburetor is of float feed type and can be regulated from the seat.

Control is by hand lever on steering column acting on drum throttle, by advancing and retarding the spark by a lever on the dash board and by accelerating of foot pedal, throwing out governor.

The clutch is leather faced, cone type, with ball thrust bearing. The transmission is of the sliding gear form, with four speeds ahead and one reverse, being direct drive on the high speed, all controlled by a single lever. There is a double chain drive. The cars have a foot brake, acting on the differential drum, and a hand lever brake of expansion type, acting on both rear wheels, these brakes being entirely encased.

The muffler which is placed on these machines won the first prize in the competition organized by the Automobile Club of France. The weight of the car is 1,650 pounds, length of wheel base, 100 $\frac{1}{4}$  inches; head, 54 $\frac{1}{4}$  inches. The wheels are all the same size.

#### RECENT INCORPORATIONS

Cleveland, O.—Automobile Garage & Repair Co., capital stock, \$25,000. Incorporators, Ralph Worthington, Henry T. Loomis, Albert L. Soper, Alexander C. Caskey, Joseph M. Belin.

La Porte, Ind.—Automobile Co. of La Porte, capital stock, \$8,000. Incorporators, William N. Rumley, John Wolf, W. J. Vogt, Axel Lindgren and Martin Weber.

San Jose, Cal.—Letcher Automobile Co., capital stock, \$25,000. Directors, Clarence H. Letcher, G. E. Letcher, L. D. Letcher, W. S. Corliss and F. E. Coykendall.

Detroit, Mich.—Reliance Automobile Mfg. Co., capital stock, \$150,000. Stockholders, D. O. Paige, Fred O. Paige, Hugh O'Connor, George C. Weatherbee, John O. White, W. H. Miller and others.

Chicago—Lake Shore Auto Station; capital stock, \$5,000. To rent and repair automobiles. Incorporators, Arthur W. McGovney, W. R. T. Ewen, Johann W. Waage.

Rochester, N. Y.—Genesee Auto Car Co.; capital stock, \$10,000. To manufacture motors, etc. Incorporators, Edward A. Keenan, George W. Mason and Henry H. Kingston.

#### NEW N. A. A. M. DIRECTORS

The following changes have been made in the executive committee of the National Association of Automobile Manufacturers: Percy Owen, R. D. Chapin, Col. K. C. Pardee and Albert L. Pope will take the places of Alexander Winton, R. E. Olds, J. W. Packard and Col. A. A. Pope, respectively. J. Wesley Allison has resigned the third vice-presidency, and has been elected secretary. G. W. Bennett has been elected third vice-president. A. B. Tucker will be appointed resident representative of the association at the St. Louis exposition.

## A WONDERFUL GROWTH

### The Touring Club of France Is Now Fourteen Years Old and Has 84,500 Active Members

The Touring Club of France was organized January 26, 1890, and for a time occupied two small rooms as headquarters. By December 31 of that year the membership had reached 436, including seven women. The finances of the new organization were not very heavy and after the sum of \$4 had been placed in the reserve fund \$22.70 was left to begin the season.

The club had many prominent Parisians on its roll, and while its direct object was to make the club a pleasure society, the numerous manufacturers and dealers belonging to it began influencing the French government as much as possible to improve the roads. Within a few years the Touring club became an important factor in the French capital. In 1895 the 25,000 mark as to membership was almost reached, the exact number being 24,923, which, compared to the preceding year's membership, 7,647, showed a most astounding increase.

With this increase in members came a corresponding period of prosperity in the treasury, and from the paltry \$4 carried in the reserve fund in 1890 the amount increased until it reached \$48,497 last year, while the total income in 1903 was \$180,049. One of the finest residences in Paris, the Humbert hotel, was bought last year for \$90,000, and is now the home of the club.

The membership of the club up to December 31 of every year since its foundation was as follows: Four hundred and thirty-six members in 1890, 1,136 in 1891, 1,843 in 1892, 2,951 in 1893, 7,647 in 1894, 24,923 in 1895, 46,724 in 1896, 61,770 in 1897, 70,020 in 1898, 72,576 in 1899, 73,120 in 1900, 74,004 in 1901, 77,641 in 1902 and 84,504 in 1903.

Among the members of the club are many of the members of Europe's royal families, while the princes and dukes and barons are so numerous that it would require a booklet to name them. The names of almost all the leading automobile manufacturers of Europe are on the club's blue book.

While still a social organization, the club does a great deal of good for automobilism, and is quite as active in this respect as the Automobile Club of France, with the difference that it does not touch racing matters.

#### BUSY ON FAST CRAFT

Hartford, Conn., March 5—The number of high speed motor boats to be owned about Hartford is certain to be large during the season to come and yachtsmen are making plans for the ownership of such craft. Daniel S. Morell, secretary of the Hartford Canoe Club, is having built at the yard of L. D. Huntington, of New Rochelle, a 30-foot flyer which will be equipped with a four-cylinder 20-horsepower motor. The boat will be very lightly constructed and will have but 5 feet beam. With propeller running, the draft will be 12 inches and the boat will float on much less water when not running at top speed. The terms of the contract provide that the craft must make 15 miles an hour over a measured course and both the engine and hull builders promise even better than this. It is anticipated, in fact, that 20 miles an hour will be made.

F. A. Law, mechanical engineer with the Electric Vehicle Co., who is a boat-owning

yachtsman, is consulting with Designer E. N. Way for a high speed boat of 40-foot measurement. This boat will have 5 feet beam and Law's present plan is to equip it with 40 horsepower. It is expected that work will be begun on Law's craft early in the present season.

G. A. Lowry, of East Boston, inventor of machinery for scraping hogs used in the Chicago stock yards, of cotton presses, and a variety of other well known devices, has produced a new propeller wheel by which it is expected greater speed will be attained than ever before with high speed motors. It has always been a theory that it was not practical to turn a propeller more than 600 to 700 revolutions a minute. Mr. Lowry has proceeded on the principle of a post-hole auger, and claims by his invention it is possible to turn over 1,500 or more revolutions with the water little if any disturbed and with every bit of effort counting in the speed. He has built a couple of propellers of this type and is testing them hitched to gas engines at his laboratory in East Boston.

#### NOTES OF EUROPEAN TRADE

The importation of automobiles into Dutch India is rapidly increasing and ought to present a good field for American cars. The value of the cars imported during 1902 was \$29,267, most of which came from France and Holland. According to the United States consular report there were also three American automobiles, which, however, came from Singapore. The roads in Java are fairly good and well adapted for motor car service.

An automobile factory of Nuremberg, Germany, has received an order for an automobile train from the Dutch government which will be of a novel pattern. While the driving power is supplied by an alcohol motor, each wheel has an electric motor, fed directly from the dynamo, so that the wheels are driven without mechanical complication. When empty this road train weighs 7 $\frac{1}{2}$  tons, and 10 tons when loaded. It can draw 20 tons without difficulty. The train will not average more than 6 miles per hour and must be able to be driven on the roughest road, as well as over soft grass and farming ground.

In the Portuguese colonies automobiles and motor bicycles are subject to a duty of \$132, and chassis are subject to a duty of \$78, while detached parts are not subject to duty.

On account of the increasing number of different styles of automobiles used in the British army, it has been decided to build a special automobile repair shop in Aldershot. The government is considering the advisability of establishing an imperial automobile factory.

It is claimed that a German manufacturer, established in Nuremberg, has made an automobile tire of leather which has proven superior to any kind of solid or pneumatic tires, and that a motor car fitted with such tires covered 16,120 miles without necessitating either repairs or replacement.

A Berlin newspaper says, after severe tests, which began last winter, under the direct supervision of the German emperor, the latter finding the results very satisfactory, ordered six heavy commercial cars, each costing about \$5,000, to be used instead of the four-horse wagons used heretofore. The service is between the castle in Berlin and the one in Potsdam, and takes only 2 hours, including the return trip, as against 7 hours with horse-drawn wagons.

## WAS SELDEN ANTEDATED?

**French Engineer Argues that Lenoir Was Years Ahead of American Yet Partially Admits the Selden Claims To be Strong—He Also Suggest that Rosenwald Patent May Affect Case**

Both the Selden and Lenoir patents have recently been much discussed, says Phillip Rey, an engineer, in *l'Automobile*, of Paris. The word "bluff" has been used repeatedly in connection with this subject and the dailies and weeklies have tried as much as possible, in discussing the two patents, to show that Lenoir had priority of invention in a car itself, as well as in the clutch device, etc. There remained to be established, however, in the matter of jurisdiction governing the patent inventions, whether the Selden patent, the age of which seems very extraordinary, were really still valid and if the documents cited lately were really against it according to the sense of American law.

As we wanted to know exactly how the matter stood, we consulted Lavoix & Moses, engineers and counselors of patents. Here is what Mr. Lavoix said: "You are speaking there of a 'bluff' prepared in a superior manner. The press has already published notices of previous inventions to the Selden patents and one has described the investigations made in Europe by the American syndicate which bought this famous patent, but nothing has been said of the extraordinary circumstances which are really unbelievable at first examination. How can a patent which was filed in 1879 be valid in 1904, that is, for 25 years, inasmuch as patents last only 15 years in the principal European countries and 17 years in the United States? One might think a special law had been brought in to prolong this patent, as a national reward.

Among those Americans well posted the famous Selden invention is thoroughly ignored. Applications for patents in America are put through a preliminary examination before the patent is granted. Until recent years the inventor had 2 years to answer the objections of the examiner. Generally the inventor did not profit by this length of time and even when there were two or three successive objections, the patent was allowed 2 or 3 years after the date it had been filed.

Concerning the Selden patent the answers to the objections were very likely not made until the extreme limit of the 2 years had been reached, but the inventor resorted to clever ways of procedure to obtain new facts and new objections concerning the patent, inasmuch as it was filed May 8, 1879, and the patent only granted November 5, 1895; that is, 16 years

and several months after having been filed. Inasmuch as the duration of American patents is 17 years and as this time is only taken into consideration from the moment the patent has been granted, it can be seen that the Selden patent, which was granted November 5, 1895, would have expired November 5, 1912. It has thus lasted 33 years 6 months. The American syndicate can thus still use the patent during 9 years. One must really recognize that the game was not badly played at all.

The second part in the matter, which consisted in getting up a syndicate or trust to which the different American makers adhered,



A ROAD IN INTERIOR NEW ZEALAND—HOW ABOUT INTERIOR ILLINOIS?

with a view of imposing a license fee on any imported car in the United States, is certainly not inferior to the first, inasmuch as with such a combination no American concern will try to have the patent declared void. Has the continent nothing to do but to bow? We do not believe it in any way.

Let us observe, however, that the Selden patent can have no loss of value, inasmuch as in America the patent, after having been allowed, is not subjected to an annual fee nor to exploitation, contrary to the methods used in most European countries. The patent can not be attacked except in demonstrating that the invention was not new in the sense of the American law when it was applied for.

In recent articles the French patent of Lenoir of 1860 for gas and hydro-carbon motors has been analyzed at length and letters from the former foreman and workmen of Lenoir have been produced. These establish the fact that the French inventor had built, as early as 1862, an automobile fitted with a motor of his design and possessing a clutch.

The Paris manufacturer, M. Jeanstaud, related to me that he personally assisted at the first trip of the Lenoir car, which was driven by Lenoir, so that the priority of Lenoir is well established. This is unhappily, however, not sufficient. The Lenoir patent, which is the only document that has been published, covers only the motor and does not describe the application of this motor to the automobile.

As to the Lenoir vehicle, as it has not been patented nor described in a printed publication, it is not opposable to an American patent. This fact is taken from section 4923 of the American law concerning patents, which section has for its title, "Patents are not null on account of previous foreign exploitation."

Something else must thus be found. Fortunately we are not embarrassed. The essential principles in the automobile vehicle are altering the direction of the movement of the car; and the clutch, for disengaging the motor and for starting. The speed change and the starting

are described in the numerous patents covering steam vehicles and filed between 1830 and 1878.

There remains to the credit of the Selden patents only the combination of these parts with an explosive motor. This combination has been described in all its details in the French Rosenwald patent, which is 2 years older than the Selden patent, inasmuch as it dates from February 3, 1877.

The motor cooling, through water circulation, which is mentioned in the Selden patent, is also to be found in the Rosenwald patent. The Selden patent can, thus only be valid for the manner of construction, which it describes, and not for principles already known and already combined between them

in the application of these same principles to a practically operating motor car.

### THE KAISER'S NEW CAR

The German emperor has ordered an automobile similar to one of King Edward's. The body will be built in England and will be of the omnibus type. Behind the driver's seat is a structure with a glass front and back, and a roof is built over the seats, which accommodate six persons. The car will be lighted by electricity. The upholstery is crimson leather and the body will be painted in the same colors as the German imperial train, ivory white being the prevailing tint, with lines of dark blue and gold. The motor will be furnished by the Mercedes company.

The Electric Storage Battery Co., of Philadelphia, Pa., has contracted with the World's Fair Automobile Transit Co., of St. Louis, Mo., for 100 sets of forty-four cells each of the Exide battery. These batteries are to be used in the operation of the bus line which is to be in service during the fair.



## PUTTING ON A FRONT

**"P**UTTING on a front" is the most common way to rivet attention, and in elegant as the phrase may be it is certainly expressive of the meaning implied. It may be used both literally or figuratively. It applies as well to the man who affects red vests and red neckties as to the man who throws out his chest in a telephone conversation.

It may not be just but it is true that things are generally judged by their fronts. The ordinary city house is the best evidence. Automobile builders do not go the extreme that city house builders do in putting on a fine front even at the expense of everything else, but they are none the less anxious that the front end of the car is attractive to the same measure that the chassis is mechanically excellent.

People judge largely by first impressions and the first impression a person generally gets of an automobile is the appearance of its front. In strict seriousness the character of the front end of a car does more to determine its general appearance than does the character of its rear end, freak construction being excepted.

In the early days of the motor industry the makers of automobiles copied carriage styles outright. In fact, they so nearly duplicated carriage forms that it seemed to be their endeavor to make an automobile look as much like a horse and buggy without the horse as possible. Then came the reaction—the quick attempt to make automobiles distinctive vehicles. This attempt brought with it the motor bonnet.

Primarily it was not a part of the attempt. It was the result of placing the motor on the front end of the running gear, where it would not be covered by the body proper, but would need some separate covering. But automobile makers saw in the bonnet the means of ridding the automobile of the shaftless carriage appearance and grasped it, whether in their individual practice they placed the motor on the front, the rear or the middle of the running gear.

Those who had evolved the bonnet as a necessary part of a motor-front machine brought out a sloping curved affair with beveled sides. It at once became the vogue. It covered everything from one, two and four-cylinder motors to induction coils and boxes for monkey wrenches and spark plugs. Some makers took up the bonnet idea as a good one, but were unconventional enough to create styles of their own conception. It is needless to say that these styles varied from the very good to the very

bad. Steam machines suddenly had bonnets and then electrics had bonnets. Almost everything with four wheels and a motor had a bonnet of some sort.

The almost general use of a certain style of bonnet was brought to an end by two things—the natural desire of the American designer to create new things and by the Mercedes. When this German-made car appeared with the square bonnet there was a somewhat widespread abandonment of the sloping curved affair in favor of it and about the same time all sorts of adaptations of the article commonly known as box were brought out. Then came the new Mercedes bonnet with curved top and square base and another switch in tactics was noticeable.

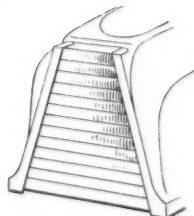
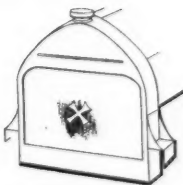
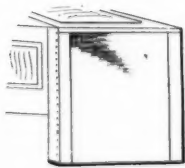
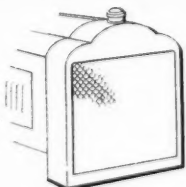
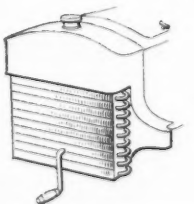
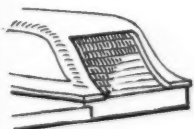
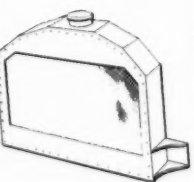
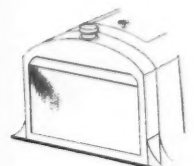
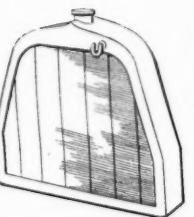
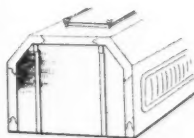
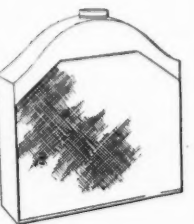
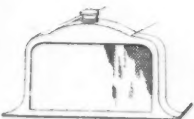
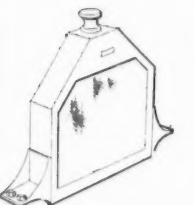
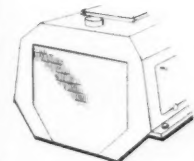
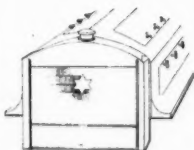
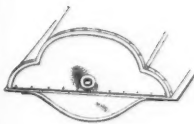
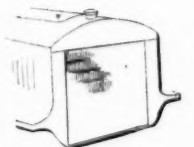
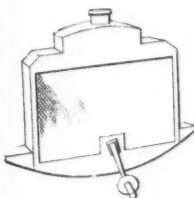
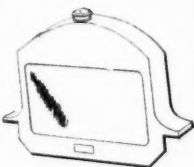
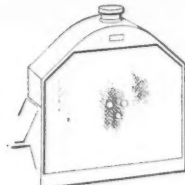
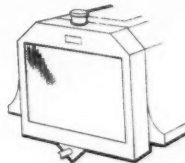
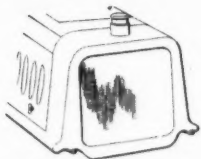
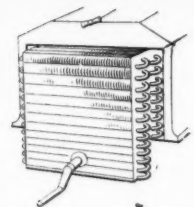
Its adoption was so common that makers in all countries recognized it as a sort of standard in bonnet style and announced that their cars were fitted with Mercedes style bonnets.

The latest development of the bonnet has been twofold—by the course of original design and by the course of reconstruction of the Mercedes bonnet. Both courses aim toward the same end—to be original.

In the former process many of the freaks have been weeded out, leaving several excellent bonnet designs which are at once peculiar to the machines they characterize and attractive in appearance. A few rather far fetched conceptions of what comprises a good looking front, of course, remain to prevent bonnet building from becoming too conventional.

In the course of the latter process almost every conceivable way has been taken to make Mercedes bonnets which will be like the original, yet different. In some cases the original bonnet has been improved; in others it has been caricatured, but in all its unmistakable likeness is plain. The result of all this effort toward individuality in bonnet making is partly shown by the border of this page, which constitutes sketches of twenty-four of the bonnets of 1904 American automobiles.

The motor bonnets of automobiles certainly form an interesting study; just as interesting, in fact, as that once formed by the evolution of the bicycle frame. The ending of that evolution was the standardization of a certain pattern of frame which made all bicycles look alike to the casual eye. Whether or not motor car bonnets will be so standardized is an open question, but it is probable that they will not as they are obviously creatures of design only and not subjects into the account of which must be taken structural strength and general fitness.



# GOSSIP OF THE METROPOLITAN GARAGES



Deliveries of the S. & M. Simplex cars will begin in May.

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"We are getting out the Ramblers in good shape," said George W. Bennett, who was in town last week attending the N. A. A. M. executive committee meeting, "having raised the daily output from six to eight cars."

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The first of the Pope-Hartford tonneaus has been on exhibition at the Pope Mfg. Co.'s down-town store for 10 days. Deliveries of the Pope-Tribune runabouts are expected to begin next Saturday. Colonel Pope is highly pleased with the popularity the new Toledos have won and says he challenges any foreign maker to show their superiority in workmanship, material and all around merit.

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Jefferson Seligman, the banker, who has probably owned more cars and tried out more makes than any individual owner in America, is the purchaser of the first Martini to be imported by Alexander Fischer. It was due to arrive last Saturday. Mr. Fischer has placed a Martini at the disposal of Secretary Butler, of the A. C. A., for a speed try out of the Virginia Beach course on Saturday or Sunday next.

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A. F. Meyers has opened a garage at 307 West Forty-fourth street, and is engaged in the importation of the Aries car and Aster motors. The cars have Aster motors, though Mr. Myers sells the motors separately as well. At present importation is confined mainly to the 8-10 horsepower models at \$2,500, and the 12-14 horsepower cars at \$3,000. The cars are very catchy looking vehicles and are fitted with handsome natural butternut bodies. Mr. Myers says he has had many inquiries for the Aster motors for boat equipment and hints at a big racing craft so fitted, of which something will be heard later.

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The "United States Agency Michelin Tire Co.," recently formed, with a capital of \$50,000, and Norris M. Mason, former manager of the New York branch of the Franco-Americaine d'Automobile, as president, has just established one of the largest and most pretentious garages in the city. It occupies the entire lower story of a great brick and iron structure built on five city lots, from 132 to 140 West Twenty-seventh street. It has 10,000 square feet of floor space. Of this 7,000 square feet are given over to vehicle storage purposes. The rest of the space is devoted to the offices, a store room for Michelin tires and imported sundries and a completely equipped repair shop for vehicles. Mr. Mason told the MOTOR AGE

man that the piles of unpacked tubes and boxes represented \$14,000 worth of Michelin tires and that \$22,000 worth more were on the way. Mr. Mason will say nothing of any business to be conducted at present, beyond the tire, storage and repair lines, and that he will have nothing to say about any vehicle selling department until after his return from Paris, whither he sails next month. It is guessed, though, that M. Clement is the main backer of the enterprise, though Mr. Mason owns to a considerable number of American stockholders in the new enterprise.

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The boys are giving Percy Owen the "haha" and "come on!" following his adventure with a pseudo "Charley Dwyer," who wanted to buy a Winton for Fuller, the jockey, and incidentally put him next to a pool-room killing at New Orleans. Two men representing themselves as employees of Harry Payne Whitney tried to engage storage space for four cars. Before they had time to give him any "tips" he chased them out. They went down the street to the Mobile garage, but Owen promptly found two cops to arrest them, after Mr. Whitney's secretary had assured Percy that they were imposters. Despite the general public opinion that automobile dealers are "highway robbers" grown gray in the pursuit of crime, the bunco men have evidently sized up the New York bunch as "easy marks," for still other bunco attempt stories are afloat.

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Hollender & Tangeman have sold twelve of the forty-five Fiats—not F. I. A. T. any more, please; too clumsy, you know—of the forty-five allotted them by the Turin factory. This means orders up to May. Hence Mr. Hollenden's sudden sailing to Italy to secure a larger share of the output, and, by the way, he will endeavor to secure the 200-horsepower Fiat racing boat that is to compete at the Nice regatta this spring for the money match and open races expected next summer in those waters. Mola, an Italian crack, has been imported to drive a Fiat racer in the track, road and beach contests, and also in a time trial at Ormond or Virginia Beach. Among the recent buyers of Fiats are: Charles A. Moore, of Manning, Maxwell & Moore; Dr. Lewis Morris, of the United States navy; Charles O. Gates, Jules J.

Vatabel, and Miss M. C. Bishop, daughter of Mrs. Heber Bishop.

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John D. Price, of Hazelton, Pa., has been added to the firm of Woolston & Brew, agents for the Thomas three-cylinder cars.

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The committee appointed to boom Newport, R. I., as a summer resort will ask William K. Vanderbilt, Jr., and Colonel John Jacob Astor to co-operate in establishing a sporting park with an automobile track as a feature. The automobile track was first suggested by Mr. Vanderbilt about 3 years ago, and Colonel Astor became interested in the project last summer. It is estimated that \$25,000 will be needed to establish the park and track.

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In response to the request by the New York Automobile Trade Club that its members furnish pictures for the adornment of the club's rooms in the Hotel Navarre, Alexander Fischer, importer of the Martinis, has contributed a cleverly conceived cartoon in water colors, which perpetrates a galaxy of "gags," whose point the local trade well understands. It is entitled "Running the Gauntlet" and gives a burlesque view of the Thirty-eighth street "Automobile Row," looking down the street from Broadway. Possible purchasers in the persons of a portly gentleman and elegantly attired lady stand in the center of the street.

"The only street is Forty-third street, mamma," cries the small boy.

"Forty-fifth street is where you get the real ones" urges a scout.

"I must have a Decauville," screams a man running pell mell down the street, where E. S. Partridge stands in a doorway with a motor boat under his arm, crying out, "'Urry hup before they are gone, h'old chap.' The tin pan, you know."

"We have only a few Richards left. If you want one, come quick. Nothing like them," bellows Gallaher.

Proctor Smith stands at the corner with the Harmsworth cup under his arm pointing out the Smith & Mabley garage around the corner.

On the other side of the street F. A. La Roche sticks his head out of an upper window and shouts: "The Darracq is the best on earth. Look it up."

At the end of the row a bunch of newspaper men stand. "Let's go up on the next block," suggests one of them. "Sure," is the answering chorus at the idea of visiting Soubrette Row.

In a vignette in the corner a picture represents Fischer raking in the thickly scattered "long green." A cocktail glass labeled "Martini" is at hand and in the air a motor boat.





# NEAR THE HEART OF NEW ENGLAND MOTORING

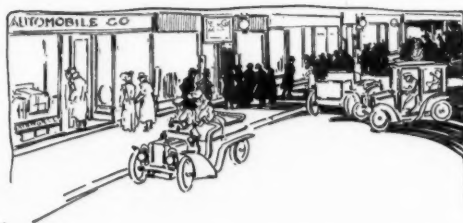
The Automobile Club of Bridgeport, Conn., has a membership of seventy and many of its members are owners of high priced machines. The club is in a thriving condition and is one of the most influential motoring organizations of New England. The officers of the club are: President, Jesse B. Cornwell; vice-president, W. S. Teel, Jr.; secretary, Dr. D. R. Beebe; treasurer, Frank T. Staples; board of governors, Frank Miller, David T. Read, Bernard Setzer and Frank I. Hitchcock.

Asa Goddard, president of the Worcester, Mass., Automobile Club, is an enthusiastic automobilist and has the distinction of being the first to use an automobile in this city, this being one of the first manufactured by the Olds Motor Works. He is a strong advocate of good roads, road making being his business. The Massachusetts State Automobile Association lately made him chairman of the good roads committee. B. A. Coates has lately been elected vice-president of the Worcester Club.

For its population, Marlboro, Mass., is one of the most enthusiastic towns in the state. The Marlboro Automobile Club is a very harmonious and pushing association. It now has a membership of forty-seven with a large increase in sight. The president of the club is Dr. Hoitt, an exceedingly popular man, whom his fellow citizens honored in the past by placing in the mayoralty chair. The other officers of the club are Dr. J. S. Harriman, vice-president, and J. F. Otterson, secretary and treasurer.

There are twenty-five members in the Automobile Club of Fitchburg, Mass. An increase of ten more members is expected this spring. The officers of the club are: President, C. F. Putnam; vice-president, Dr. A. H. Pierce; secretary, L. H. Greenwood; treasurer, G. P. Grant, Jr., and directors, W. H. Chase, H. R. Smith and Dr. A. E. Mossman. The roads leading from Fitchburg to the east and south are from fair to good and to the north and west fair to bad.

H. K. Reid, of Bridgeport, Conn., until recently with the Locomobile Co. of America, has taken charge of the Auto-Headquarters at 609 State street, Bridgeport. The station includes ample room for storage and a com-



plete repair shop outfit. Special facilities for machine work are being installed.

G. B. Parsons, proprietor of the Bristol, Conn., Auto Station, is the local agent for the Orient buckboard, and also maintains an extensive storage station and repair shop.

At Derby, Conn., N. L. Biever has a general agency and repair shop business at 271 Main street. His trade seems to be very active.

The Oldsmobile is handled at Meriden, Conn., by A. W. Bowe & Son. This firm is also about to open a first-class repair shop. E. H. Towle Co., of which G. H. Towle is president and G. E. Towle secretary, is the Meriden agent for the Autocar and the Franklin. The company is about to erect a commodious three-story garage. The depth of the building will be 176 feet and the width 66 feet. Its facilities will include a charging outfit for electric cars.

At Waterbury, Conn., L. L. White has the agency for the Stevens-Duryea and conducts a repair shop. W. B. Colter has the Waterbury agency for the Michigan, while John Youman is engaged in the business of assembling motor cycle parts.

J. H. Star, 18 White street, Danbury, Conn., is agent for the Rambler. W. & J. Cook are about to open a repair shop at Torrington, Conn. At Ansonia, Conn., Curtis & Tomlinson are agents for the Ford and conduct a general repair shop.

The Elm City Automobile Garage is the principal establishment of its kind at New Haven, Conn., and is equipped to take care of a large number of machines, both in the way of storage and of repair. The Holcomb Co., 105 Goffe street, New Haven, Conn., has the Winton agency, while N. B. Whitfield, 67 Broadway, handles the Ford. The Campbell Cycle & Motor Co. has the agency for the Ram-

bler. The New Haven trade is booming and sales in large touring cars are expected to be numerous, several big Locomobiles having already been sold. There is also a good sale in motor cycles, J. E. Cox & Sons, Jas. N. Boyce and D. H. Duell having established agencies in the two wheelers.

B. A. Robinson, 671 Main street, Worcester, Mass., anticipates a large sale in this section of New England, and estimates that over 200 cars will be sold in Worcester this season. Mr. Robinson has the agency for the Winton, Locomobile, Autocar, Cadillac and the Waverley and Columbia electrics. His garage will accommodate forty machines and is supplemented by an extensive repair department and charging outfit.

The Central Automobile Station, 43 Foster street, with A. K. Miller as manager, has the Worcester agency for the Pierce, Olds and White. The extensive repair shop is under the charge of F. A. Lockwood, who has had European experience in the de Dion and Humber factories.

The Harrington Auto Station at Worcester is undergoing extensive alterations. There will be two floors 120 by 70 feet. The mechanical department will be in charge of A. Mackar and aside from the regular repair facilities will include paint, blacksmith and wood working rooms. Mr. Harrington sells the Knox and Stevens-Duryea.

The Worcester Automobile Co., 86 Exchange street, J. A. Dean, manager, has taken the agency for the Howard and has established a repair shop and storage station.

At Marlboro, Mass., Frank Billings has the agency for the Knox and anticipates a lively season, as last month he sold and delivered seven cars. D. E. Willard sells the Ford here and conducts a general repair shop.

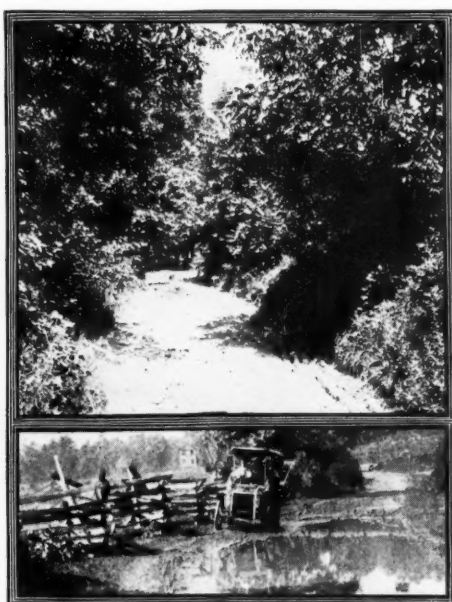
At South Framingham, Mass., C. F. Whyte conducts a general repair shop and storage station. It is well equipped.

At Fitchburg, Mass., the Iver-Johnson Co. will again handle the Cadillac for this section, while C. L. Lewis conducts a large repair shop and builds automobiles to order.

At Spencer, Mass., J. E. Goddard conducts a storage station and repair shop.



TOURING BY AUTOMOBILE IN WOODED WESTERN PENNSYLVANIA



MOTOR AGE



INCIDENTS OF A TRIP MADE BY T. R. HARTLEY, OF PITTSBURG

## THE READERS' CLEARING HOUSE

### TWO-CYCLE MOTOR

Pittsburg, Pa.—Editor MOTOR AGE—I am building a two-cycle motor for a vehicle. Which is preferable, a double-opposed cylinder or a two-cylinder vertical pattern? Should the two cylinders of the motor, if of the opposed pattern, be in line, with a single crank case, or should they be offset with a partition in the crank case? What power would be developed by a 4½ by 5-inch double opposed cylinder motor? What stroke is most suitable in combination with 4½-inch bore? What should be the size of the ports and what should be the rim weight of the fly wheel?—R. E. TWYFORD.

There is much difference of opinion concerning the relative advantages of vertical and horizontal two-cylinder motors. This subject has been often discussed and was recently summarized by Charles E. Duryea in an article in MOTOR AGE of the issue of December 10, 1903. There is no need of a partition in the crank case of the double opposed cylinder two-cycle motor. The motor would develop about 10-horsepower at 600 revolutions per minute. The stroke of a two-cycle engine may be anything from the same as the diameter to one and one-fourth times the diameter or bore. The inlet port should have a width in direction of piston travel of ⅝-inch, and a total length of 4¾ inches, measured circumferentially. The exhaust port would have a width of 11-16-inch with same width. The rim weight of the fly wheel should be about 150 pounds for a diameter of 20 inches.

### VALVE SPRINGS

Montrose, Pa.—Editor MOTOR AGE—Please inform me through the Readers' Clearing House if there is any formula for determining the pressure that must be exerted by exhaust valve springs. This depends, of course, upon the speed of the engine, the requirement being that the spring shall have sufficient tension to close the valve within, say, one-fifth or one-sixth of the stroke when the engine is running at its maximum speed. Any information upon this subject of valve springs will be gladly received.—H. W. B.

The subject of valve springs is an extensive one, viewed from a theoretical standpoint, and the computations involved are somewhat complex. There is also some doubt that after valve springs have been made according to the results of computations they will be practically correct. Experimenting alone can give absolutely satisfactory results. The subject is summarized fairly well in the chapter on Valve Openings and Valves, in Stoddard's Gas Engine Design, published by Parker & Burton, of Detroit, Mich., and obtainable in paper cover for 25 cents.

### THREE CYLINDERS

Chicago—Editor MOTOR AGE—It is my intention to construct a multiple-cylinder motor for automobile use, and I would be pleased to have from you an opinion as to the relative merits of a three-cylinder motor as compared with two and four-cylinder motors. Would you consider a three-cylinder motor to be more evenly balanced and would the gasoline consumption per horsepower developed be less in a three than in a four-cylinder motor? I wish also a

candid opinion concerning the relative merits of air and water-cooled motors. Has there yet been produced a satisfactory air-cooled motor for automobile work?—C. J. B.

The three-cylinder motor problem was exhaustively discussed in MOTOR AGE of the issue of December 10, 1903. It is probable that the three-cylinder motor would use less fuel per horsepower than the four-cylinder motor. Air-cooled motors, when properly made, have given good service, especially when used in connection with a fan to create a forced draft regardless of whether or not the vehicle is moving. Air-cooled motors have been considered practical in sizes up to 3½-inch bore, but recently several makers have brought out larger models, and their performance the coming summer will be watched with considerable interest.

### HORSEPOWER FORMULA

Boston—Editor MOTOR AGE—Will you kindly publish in the Readers' Clearing House a good formula for motor horsepower for four-cylinder motors, giving the compression, number of revolutions, and size of cylinders? Should the compression be calculated at the top of the stroke or at the moment of explosion? Also kindly give a formula for determining fly wheel weight.—E. O. S.

A good formula for indicated horsepower is—

$$I. H. P. = \frac{P \times L \times A \times N}{33,000}$$

in which P is the mean effective pressure; L, the length of the stroke in feet; A, the area of the piston in square inches, and N the number of impulses or explosions per minute. For four cylinders the results obtained by this formula would be multiplied by four. The mean effective pressure may be determined from the maximum gauge pressure of compression by Grover's formula—

$$M. E. P. = 2C - .01C^2$$

in which C is the gauge pressure. It is wise, however, to deduct about 10 per cent from the M. E. P. thus obtained, to allow for losses.

Formulas for determining fly wheel weight are given elsewhere on this page.

### MOTOR PROPORTIONS

Chester, Ill.—Editor MOTOR AGE—Will you kindly give the following dimensions for a four-cycle, four-cylinder, air-cooled motor of 3½-inch bore and 4-inch stroke, the cylinders of which work in pairs and the compression space of which is one-fourth of the stroke—the diameter and weight of the fly wheel; the diameter of the crank shaft; the depth, thickness and distance apart of the radiating ribs on the cylinder? In this motor is it necessary to have three bearings for the crank shaft, the crank case being 26 inches long? What is the formula for determining the weight of fly wheels for multiple-cylinder motors?—A. CHENUE.

The fly wheel may be 20 inches in diameter and of 90 pounds weight. The crank shaft should be 1¼ inches in diameter. The radiating ribs should be about ⅝-inch deep, about ⅜-inch apart and as thin as they can be cast, being tapering in cross section. It is not absolutely necessary to have three bearings for the crank shaft but it is extremely advisable to do so. There are several formulas for determining fly wheel weights, but the re-

sults obtained may not always be practically applicable. Generally fly wheel weight is determined by practice. One formula is—

$$W = \frac{193,000,000 H. P. a}{D^2 n N^3}$$

in which H. P. is the indicated horsepower; a, the maximum number of strokes between impulses; D, the mean diameter of the fly wheel rim; n, the variation in the speed of rotation, taken as a fraction and in this case probably .3, and N is the number of revolutions per minute. A simpler formula, and one which serves practically as well is—

$$W = \frac{M. P. \times S \times A}{D}$$

in which M. P. is the mean pressure of compression; S, the stroke; A, the area of the piston, and D the diameter of the fly wheel. In such calculations only the weight of the rim is considered, it being common practice to assume that if the rim is sufficiently heavy to make the engine run sufficiently steady the weight of the spokes and hubs will but add slightly to this effect.

### STARTING COLD MOTOR

Toledo, O.—Editor MOTOR AGE—I have trouble in getting an explosion in the motor of my car after it has stood out in the cold for any length of time. It seems to be affected at a temperature of 45 degrees or under.—S. B.

The trouble probably lies in not being able to vaporize sufficient gasoline with the cold air drawn into the carburetor. By holding something over the open end of the air inlet to the carburetor to partly or wholly close it motors are often started in cold weather.

### RELATIVE FLY WHEELS

Columbus, O.—Editor MOTOR AGE—If a four-cycle, single-cylinder motor of a given size requires a fly wheel of a certain weight, what weight of fly wheel is necessary for a four-cylinder motor of the same cylinder size and speed giving four times the power, with two impulses each revolution?—A. L. JOHNSTON.

The fly wheel would be about 20 per cent heavier for the four-cylinder motor.

### AIR-COOLED MOTOR

Bradwell, Pa.—Editor MOTOR AGE—In MOTOR AGE of No. 12 of Vol. 3, is a description of a small two-stroke motor. I wish to know how large such a motor can be made. Can such a motor be made up to as high as 6 or 8 horsepower? What concern makes this engine?—J. M.

The motor being air-cooled is practically limited to 3½-inch bore, unless provided with something more than the ordinary radiating ribs to assist cooling. Thus its power would be limited to about 4½ horsepower. MOTOR AGE does not know of any concern which makes the motor described for the market.

### WATER CIRCULATION

Duluth, Minn.—Editor MOTOR AGE—I have had more or less trouble on account of my engine becoming heated. I imagine that perhaps the water circulating system is not connected correctly. What is the correct method of connecting a system for a double-cylinder opposed motor, there being a tank, radiator and pump?—A. R.

One of the common methods of connection is that whereby the water travels from the tank to the pump; from the pump to the lower ports in the cylinder water jackets; from the upper ports in the water jackets to the radiator and then back to the tank.



# MOTOR BICYCLE ILLS AND A FEW REMEDIES

Under the inspiration of President Burley B. Ayers and Secretary Ira H. Whipple, the recently organized Chicago Motor Cycle Club holds weekly discussions on every phase of the motor bicycle and motor bicycling. The meeting last Wednesday brought out a general talk on fuel, plugs, batteries, etc., which, condensed, follows:

**GASOLINE OBTAINABLE**—"Stove gasoline" has been the obtainable fuel, and it varies from 62 degrees to 72. No trouble has been experienced that is traceable to quality of gasoline. Not that such trouble may not be traceable to the gasoline, but it has not been looked for there. It was agreed that the function of the captain in laying out runs, was to ascertain the gasoline supply en route and encourage the purchase of good fuel; for those now having it never thought of quality, as gasoline is simply gasoline. Many theories were discussed, showing a leaning to 72 test as being best for the plugs and machine generally.

**PICRIC ACID AND ITS USE**—One member had used it in his automobile last summer with good result as to increased power. He figured it drove his machine 15 per cent better, but the gasoline would cost twice as much when doctored with the acid. He did not think it practicable for the road, although a fine thing for races. He experienced no harm to his valves, the only evidence of use being a discoloration. This was the experience of Wright Elsom, of Oak Park, Ill.

**SPARK PLUGS**—G. W. Hunter, of Hammond, Ind., stated he had experienced trouble from plugs in high speed motor cycle engines. The heat thus engendered expanded the plugs and loosened them and the vibration did the rest. He had, however, received a new plug that was calculated to overcome this liability and from trial he had given it was an improvement. There was divided opinion as to the merits of mica and porcelain. One would loosen and short circuit, while the other would break. One member had trouble through the porcelain



breaking and a piece, getting into the valve, broke it. They both seemed to have evils too numerous to mention.

**BATTERIES**—Some batteries tested high amperage but died quickly in use. The most reliable test in experience was those holding to 18 or 15 amperes with  $1\frac{1}{2}$  volts. Batteries were easily obtained but they were the standard  $2\frac{1}{2}$ -inch of the usual Columbia type, this being the kind carried by the telephone company, whose outlying stations were handy depots for such. Difficulty had been experienced, though, because many machines were fitted to carry smaller batteries, and hence some members had to tow home, unable to use the obtainable cells. This year the members were refitting their cell boxes to carry the standard size. The automobiles greatly aided this standardization of cells, having practically taken to the  $2\frac{1}{2}$ -inch size. A discussion as to life of a battery of three  $2\frac{1}{2}$ -inch dry cells showed variation of data, for some engines ran slow and some high; but it was thought good practice in average experience to get 600 to 800 miles. Some had found economy in adjusting the circuit breaker and cam. One member cut down the breaker one-third and got same power with longer life. Some had experienced resumption of life in a battery that was exhausted on the road by punching holes in the cell and pouring in water.

**DAMAGES**—There had been no damage experience—that is, suits for such.

**LAMPS**—No lamp has hitherto been invented that would stay on the motor bicycle. It was the



universal experience that lamps fitted to the forkside were absolutely dangerous, without exception, and riders of any experience at all would not think of putting them there.

**BROKEN FRONT FORKS**—There had been no experience of this kind. All machines had kept intact. Mr. Bendix of New York reported that there had been some experience down there, confined to no particular machine, and that riders there had been looking favorably on the spring fork which seemed to promise immunity, while others favored the truss fork. The Schmitz spring axle was talked about, but it had not seemed to be other than an unworked theory so far around Chicago. Such an axle would be obtained and shown at the next meeting. Its object was to secure springiness to solid forks and save shock and crystallization of fork heads.

**SIDE SLIP**—No advantage was seen in corrugated tires. The automobilists were at sea on this very point and it was beyond the experience of the members.

**BELT TROUBLES**—Burning of the belt by a racing engine had been freely experienced. One member had a fall and his machine, lying on its side with the coaster brake set, gave the engine a fine chance to race. It was a rawhide belt and the fibers were burned by the friction so they separated. No record was made of flat belts so burning except in one case where it was scorched some. Leather covered pulleys for flat belts were regarded as preventive; and several members who had used such during the past season reported favorably thereon, saying they could ride with a belt less tight. Another experience was had in the operators of Kenosha using sand with rawhide belts, thus accomplishing the destruction of the belts. They used the sand to prevent slipping. But one member favored the chain—Mr. Hunter, of Hammond. As to wearing of belts, one member reported 500 miles without the slightest evidence of wear. This was with flat belt and leather covered pulley.

## GORDON BENNETT PREPARATIONS

According to Burgomaster von Marx, of Homburg, if it had not been for the direct interference of Emperor William, it is possible the Gordon Bennett race would not be run in Germany this year. All the ministers hesitated in giving permission for the event, as they were afraid of the popular feeling, which was rather against holding an automobile race in Germany.

The mayor stated that the administration and the people of Homburg are working hard making necessary preparations, but suggested that a referendum be held by every automobile club which intends to send delegations to the race, so that it might be possible to determine when and how many club members will arrive. Otherwise there may not be found sufficient accommodations. The burgomaster recognized that the prices established by the hotelkeepers' trust are high, but stated that prices were always high in Homburg and other bathing resorts, because these localities have their regular visitors and are generally crowded.

There are about twenty first class hotels in Homburg and a large number of smaller ones,

all of which are anxious to receive visitors. Prices will be moderate at the latter hotels and private residences. Homburg has a population of about 10,000 inhabitants.

Work is progressing along the course. Many stretches are yet to be rendered more rideable and in some instances less dangerous. "The general impression is that the road is pretty good, but pretty dangerous," was the mayor's comment, which gave the impression that the road must be more than "pretty dangerous," because the remark was made in such a serious way. It has not yet been officially decided how many neutralizations there will be, but the mayor thinks ten will be the minimum.

The emperor has again given specific instructions that the entire road be guarded, in a most rigorous manner, and it has been decided that the garrisons of Usingen, Wehrheim, Oberursel, Homburg, Cronberg, Limburg and Koenigstein would guard part of the road.

Besides the road upon which the start will be made, there are three leading to Saalburg. Contrary to recent rumors, a number of grand

stands with a capacity of many thousand people, will be erected in Saalburg. A special stand for the kaiser will be made, which will contain parlors, dining room, smoker, etc. A stand exclusively reserved for people who wish to reserve seats will be made near the imperial stand. A great public stand will also be constructed. Restaurants, bars and lunch counters will be found within the stands. The admission to the public stand will be \$5; reserved boxes for six persons will cost \$50.

Baron Pierre de Caters, Hautvast, Angieres, Jenatzy, and a few other prospective aspirants for the cup, went over the entire road, including the new stretches, and reported that there were forty-seven turns, but that all told, the road was better than that in Ireland. At Allendorf there is a turn of 70 degrees; in leaving Esch there is a stretch of half a mile, which gradually reaches a 15 per cent grading. According to these drivers, not over 25 miles of the road out of the 82 miles, which is the distance of the circuit, are straight and level, and these 25 miles consist of little stretches, not one of which is longer than 3 miles.

# AUTOMOBILE

## BIG, FAST AND LIGHT

Clinton, Conn., March 7—What is undoubtedly to be one of the fastest crafts to be built in eastern waters this spring is now in process of building at the yard of Wyckoff brothers for Captain John J. Phelps, who has twice circumnavigated the globe in his schooner-yacht *Brunhilde*, and who is fleet captain of the Sachem's Head Yacht Club. Designed by C. B. Wyckoff, 43 feet over all, 41 feet on the water line and but 4 feet 6 inches beam on the water line, though possessed of 6 feet greatest beam, it is expected that this craft will be one of the fastest yet put up of her length. The hull will draw but 6 inches of water.

Into a well drawn hull, conceived on torpedo lines, is to be installed a 65-horsepower six-cylinder Hasbrouck motor, the product of the Hasbrouck Motor Co., of West Mystic. Far lighter than the ordinary marine engine, yet more stable than an automobile engine, this motor will be of skeleton construction and will weigh 1,200 pounds. She will realize her full power at 600 revolutions. The weight of the entire craft, engine installed, though planked with Honduras mahogany, will be but 2,300 pounds.

The hull will be divided into two cockpits and the motor will be placed in the forward compartment, so that the steering and management of the motor will be unobstructed by the presence of others than the crew. Seating accommodations for twelve passengers have been provided in the long after compartment. The boat is more solidly built than the boats which are being built for speed purposes, because Captain Phelps needed a craft in which he could come and go from his Thimble island summer home. It was for this reason that her guaranteed speed was cut down to 20 miles an hour, over a measured course, but her designer and engine builder are both confident that she will make better than this rate of speed.

## MOTOR BOATS FOR THE "400"

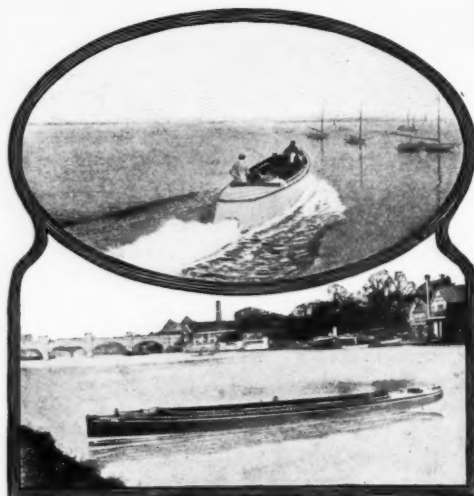
Some of the members of New York's smart set are taking kindly to motor boats. An eastern maker is turning out three boats to run from 20 miles an hour upward. One is for W. K. Vanderbilt, Jr. The length on the water line is to be 35 feet and 40 feet over all. It will be fitted with a Mors engine of 60-horsepower. She is double planked of Alaska cedar, and all frames are steam bent, while the turtleback deck and trimmings will be of mahogany.

The second boat is for W. Gould Brokaw and is 65 feet over all and 7 feet beam, with 3 feet extreme draught, including the propeller.

She will be installed with a French automobile engine of 200-horsepower and will develop 20 miles an hour. Her planking is double, and the torpedo turtleback deck forward is of mahogany. The sleeping accommodations for the engineer are forward.

James E. Martin's boat will be 35 feet on the water line, with 6 feet beam. The engine will be a 35-horsepower Smith & Mabley. This boat is to make close to 20 miles an hour.

Another designer is building for J. H. Flagler a 35-footer. The hull is being built of Mexican mahogany and oak. There is to be a double cockpit with the motor and helmsman



in the forward one and seats for six people in the after one. The motor will be of the four-cylinder pattern. The ignition current is obtained from a constant current dynamo, which permits of starting the motor without the use of batteries.

## RATING AN AUTOMOBILE BOAT

At the last meeting of the American Power Boat Association it was decided that an automobile boat should be considered one whose rating exceeds ten times the square root of its load water line length. In measuring, it was decided that the midship section should be considered the actual greatest transversed immersed area. Other elements for measurement will be the same as provided for boats of all types in the association rules. The classification for automobile boats was decided to be all below 50 feet rating, between 50 and 100 feet and over 100 feet.

Arrangements were made so that owners of power boats may have their craft officially tested over the measured mile which has been laid out in Manhasset bay. The secretary of the association will issue a certificate of the same. Any owner desiring to have his boat timed will be required to notify the secretary of the American Power Boat Association at least a week in advance. The days set apart for these speed trials are the fourth Saturdays in the months of May, June, July, August and September. The measurement fee will be \$10. The timing will be done under the supervision of a committee to be appointed soon.

## MOTOR BOAT NOTES

Newport, R. I., is to hold a motor boat exhibition and a series of races this summer.

The builders of a 60-foot boat, soon to be launched on the Harlem river, New York, figure on a speed of 35 miles an hour.

Hollander & Tangeman are to furnish R. P. Hoagland with a motor boat which will be fitted with a 150-horsepower Fiat motor. Kerosene will be used for fuel instead of gasoline.

A race from Albany, N. Y., to New York city is being talked of by the racing board of the A. A. A., and Chairman Pardington has set about to make rules and boom the affair.

The demand for motor boats and marine motors is exceptionally strong at present. This demand is credited to the boom given the sport by the press through the advent of the automobile boat. Most of the eastern and western makers are hard pressed to turn out orders in time for early launching. There has never been so many home-made boats on the ways as at present, which accounts for the demand for motors.

# BOATING

## WHO WILL CONTROL RACING?

New York, March 7—Who will control motor boat racing in America?

There is an unsettled condition of affairs now and a dispute has arisen as to what organization is authorized to make the entries for the British international motor boat trophy, the Harmsworth cup. A member of a yachting club of standing has been quoted as saying that one of its members proposes to make a direct entry for the race on the ground that any recognized yachting club may make an entry.

Both the American Automobile Association and the American Power Boat Association have plans for the control of racing. A member of the new racing board of the former fired the first shot when he said that American entries for the Harmsworth cup could be made only through an automobile organization.

J. H. McIntosh, an officer of the power boat association, retaliated last evening by denying the statement of the A. A. A. racing board member. Mr. McIntosh said that a few weeks ago, while he was secretary of the American Power Boat Association, he wrote Linton Hope, secretary of the Marine Motor Association of England, in charge of the international race, asking if entries would be accepted from the American Power Boat Association. Mr. Hope cabled his reply and confirmed it by a letter, saying that members of the American Power Boat Association were eligible and suggested that they send an entry.

Chairman Pardington, of the A. A. A. racing board, had this to say on the situation: "The committee of three appointed by President Whipple to consider this matter is a very conservative one and will approach the subject in a moderate manner. The committee, consisting of Peter Cooper Hewitt, Louis R. Adams and myself, will meet a similar committee from the American Power Boat Association, with a view to arriving at a result satisfactory to all those interested in the sport. Our committee will also meet representative owners and builders of fast boats and from them learn their ideas as to what is needed in controlling the sport.

"I am free to say that we have no desire to antagonize the American Power Boat Association and enter upon its preserves. Originally I had in view that we should take over this matter wholly, but I think the present plan will produce a better result. Our technical committee of two, which I have appointed as an advisory board to our committee, consists of H. L. Towle, a motor expert, and Lieutenant Hall of the United States navy, who is an expert on hull construction. Naturally enough we will be guided largely by their views as to the practicability of the American Power Boat Association rules for our purposes.

"I think the outcome of the whole matter will be that we will affiliate with the latter in this way—that we will adopt its amended rules, hold races of our own—such as closed club events and long distance events open only to fast boats—leaving to the American Power Association all control of all other events."

Even this plan, if adopted, would shut out the unattached motor boat individual and leave more or less leeway for dissatisfaction.



# ELECTRICITY AS A VEHICLE MOTIVE POWER

**E**LECTRICITY as a motive power for automobiles is far too broad a question to be treated as a whole in a paper which must be as comparatively short as this one. We will endeavor, however, to take a brief historical glance at the movement and then pass on to the consideration of some of the phases of the general question. We shall endeavor to discuss the following general heads:

- 1—The requirements of an ideal system of vehicle propulsion.
- 2—The advantages of electricity.
- 3—The various fields of usefulness already entered and largely monopolized by the electric vehicle.
- 4—The cost of operation with especial note of the importance of adequate equipment and intelligent care.
- 5—General efficiency of the system and the true basis of estimating it.
- 6—A general summary of the points brought out in the paper.

I doubt if the casual observer of the development of automobiles appreciates the fact that electricity played a large, almost dominating part in the early days in both this country and France. About half a century ago a vehicle was built and operated with primary batteries as a source of power. Crude, to be sure, but no more so than many of the later first attempts of the gasoline builders.

Rafford, in 1881, built a small tricycle and also a tram car operated in an experimental way by accumulators. In 1885 Magnus Volk in England and Gustave Trouvé in France produced some electric machines, the former a dog cart, the latter a tricycle. Of all the Europeans engaged in the development of the electric automobile, three names stand out most prominently—Jeantaud, Jenatzy and Krieger.

Jeantaud began in 1881 by building a phaeton on which he used a Gramme motor. In 1887 he substituted an Immisch motor and in 1893 a Thury motor. In 1895 he built a six passenger vehicle, which, as No. 25, took part in the memorable Paris-Bordeaux race. He met with failure so far as the race was concerned, but found out a lot about the practical side, even as did his gasoline and steam competitors.

Krieger merits special mention in that he developed two unique features, the use of the front wheels for both driving and steering, and the use of the motors for braking on hills, returning the energy to the battery. These features, so far as I know, were new with him. Neither has been generally used so far, but the application of power to the front wheels as a general proposition is sure to be considerably used on commercial vehicles in the future. I believe the same applies to the combined steering and driving by the front wheels. Not necessarily in the detail form used by him, but in some more simple and practical way.

An attempt was made some years ago to establish, in both London and Paris, public cab services. They were started, however, under inauspicious circumstances and in the end both failed. An inquiry into the causes of their failure shows several good reasons why failure and not success was assured. First, the design of the cabs was poor and not founded on sound experiences. Second, the equipment at central stations for caring for the vehicles and batteries was inadequate. Third, the backers lacked the persistence necessary to overcome present failure and turn it into ultimate success. I am not sure but that the last was the most important cause of the failure.

There has been a reaction, however, in each of these cities from the stagnation following these failures, and now a healthy and conservative growth in the use of electric pleasure and business wagons is the result. There are indications that the transportation of passengers in electric cabs will be quite extensive inside of another year in both cities.

In 1897 and 1898 the first beginnings of an electric cab business were made in New York city. Here the backers had the strength of their convictions; the vehicle design was sufficiently good at the outset to insure success and the proper battery handling apparatus and system of care was inaugurated. Consequently, today we see the New York Transportation Co. doing a flourishing business with several hundred cabs and turning down orders all the time. To even the casual observer in New York city the presence of the

electric cab is a reality and is accepted as an accomplished fact.

The passenger vehicle was followed by the merchandise vehicle, whose use spread with amazing rapidity, until now several hundred electric delivery wagons and trucks are in use in New York city alone. Many have been the ups and downs in the development of the electric vehicle. But the same is true of the development of any new thing of so great importance, and the electric has emerged less scathed than some of its competitors.

In the field of sport the electric has played no mean part. In 1895 at Chicago the first automobile meet was held and an electric was entered by Morris & Salome, of Philadelphia. These men had mastered some, at least, of the fundamental principles, and, although the weather conditions were such as to preclude the use of an electric in the race, the machine made a very creditable performance. This same vehicle afterwards appeared on the race track at Providence, R. I. and established some records. A few years later the electric appeared as a road racer, when A. L. Riker in an electric vehicle won the 50-mile Merrick road race against many high-powered gasoline cars.

A little later H. P. Maxim and J. B. Entz established the first American long distance record by driving an approximately standard stock vehicle across the state of New Jersey and back on one charge. This was the debut of the electric into the touring field in this country.

About this same time a few phenomenally long runs were made on the continent, but in each with cars excessively weighted down with batteries. A little later some record breaking runs were made in one or two western cities, but on machines and under conditions scarcely representative of conservative conditions.

One very creditable performance, however, was made by a Krieger touring car in England. The car was driven from London to Glasgow, getting its current for recharging the batteries whenever and wherever it could. It participated in the endurance tests made around that city and returned to London without any mishap or drawback to mar the pleasure of the passengers. This marked the high water mark of electric touring. This last summer some very long runs from Boston to New York were made, and the participants pronounced the experience delightful and novel.

These performances have become too numerous to allow of their being classed as sporadic or freakish and they certainly emphasize the ability of the electric to make runs of 75 miles on one charge safely.

Before we can correctly estimate the value of electricity as a motive power we must establish some definite idea of the characteristics of an ideal system of motor vehicle propulsion.

All automobiles can be roughly divided into two classes, those designed and used simply for pleasure and sport and those intended for utilitarian purposes. The first class has predominated so far, although the latter is now fast overtaking it. The requisites for success are somewhat different in the two classes. In the first, comfort and convenience of the operator are of prime importance. Reliability, simplicity and cheapness of operation follow in about the order named. While there will always be a demand for this class of vehicle, it is certain to be limited and its construction will not necessarily materially affect the ultimate construction of the commercial automobile.

The second or utilitarian field is the great one open to the automobile and here it is that we meet hard and fast economic laws which govern construction. The automobile must improve the present service and decrease the present cost of transportation if it is to win in the long run. In this field the matter of prime importance is cost of operation—dollars and cents. That is the bottom of the whole question. The automobile must carry its load more cheaply than the horse can pull or the horse will hang onto his job. We will show later the fundamental features to be considered in determining this cost. Next to cheapness of operation comes reliability and simplicity of control.

**EDITOR'S NOTE**—This is the first in the series of lectures on electric vehicles, delivered before the Automobile School of the Y. M. C. A. of Boston.

We have therefore in the case of the pleasure carriages comfort, reliability, simplicity and cheapness. In the case of the commercial automobile cheapness, reliability and simplicity.

Bearing these carefully in mind we are now ready to see how electricity fills the bill. This discussion I wish to be considered in no sense argumentative. Steam, gasoline and electricity each has a field of its own and I am not trying to make out a case for one at the expense of the other. If, however, one of the others gets hit in the engagement it must await its chance to hit back.

Comfort and luxury in an automobile certainly depend upon absence of vibration, noise and odor. The rotary motion of the electric motor, the direct application of its power to the driven wheel and the absence of combustion or exhaust in any form certainly make it able to meet these requirements admirably. The development of the steam and gasoline car has been distinctly towards making them as good as an electric in these features. The electric has set the pace, however, and still leads on these points of comfort and luxury.

For such service as private broughams, opera busses, victorias, landaus and the like electricity today gives perfect satisfaction. Dignified, luxurious, silent and speedy, the electric town carriage is here to stay. In the last two years its use has increased most rapidly and one or more of these conveyances may be found in almost any modern private stable in New York city.

The light, simple and comfortable little electric runabout is deservedly popular. In spite of the claims of its gasoline rival it occupies the center of the stage when mother or daughter goes looking for an automobile. And father, too, finds that it is very unexpectedly handy for going to and from business. It is always ready and requires no particular attention on his own part if he happens to keep it at a responsible garage.

In the utilitarian field up to the present time the electric has had almost no competitor except in the heaviest class of transportation. There are easily two electric commercial wagons to one of either steam or gasoline. As noted above, cost is here the prime consideration. For how many cents can a passenger or a ton of merchandise be transported one mile? Let me say right now that you can sit down with a pencil and a piece of paper and without half trying you can make yourself believe that electricity is out of the run with steam and gasoline. Yet what do we find as the actual state of affairs? The increase of the use of the commercial electric vehicle goes merrily on—and why? Simply by reason of the inherent virtues of the electric motor. The virtues that have outweighed the virtues of the horse on the city tram car; the light locomotive on the elevated; and even now of the heavy magnificent steam locomotives. The indirect benefits are impossible of calculation, but their value on the credit side of the account is large and offsets many seemingly large debit items. The electric motor itself, apart from all other organs on the vehicle, is nearer the ideal form of motor than any of its competitors. It has few parts; is perfectly balanced; has no reciprocating parts; has long life and low repair expense; has an amazing capacity for accepting enormous overloads; automatically slows down as the load increases and speeds up as the load decreases. These are the characteristics that enable it to meet the requirements of the commercial vehicle as no other form of motor can. A sudden load does not stall it; it does not require to be started by hand; it can be placed close to its work—the driving wheel—and geared directly to it; two can be used on a vehicle doing away with the mechanical balance gear and permitting the driving to be done equally by the two wheels and avoiding stalling of the vehicle if one of the wheels fails to get traction as on slime or ice. It is not necessary, as it were, for the right wheel to know what the left wheel doeth.

Another very desirable feature on heavy traction is the application of the driving power to all four wheels, and here the electric motor fully meets all demands. The fact that its only connection to its source of power is a few flexible wire cables makes it possible to place two motors down on the forward wheels of an ordinary wagon front truck and thus apply driving power to those wheels as well as to the rear ones. For certain classes of work this division of the driving strain over four instead of two wheels is of



great advantage. The electric motor is the only motor which can do it simply and efficiently.

Then, the control of the electric is so simple that when placed in the hands of comparatively ignorant drivers the electric motor suffers less than its rivals. Our ideal power system must be proof against ordinary damage in ordinary service by ordinary drivers. The absence of all change gears, throttle and igniter levers, feed pump handles and the like are strong points in its favor. Just as the motorman on an electric car has simply to turn on the power, so the operator of an electric vehicle has only one lever to work beside his steering gear and brake. Just turn on the power, as it were, and watch the road. It is these interesting features of simplicity that have given the electric its lead in the commercial field and bid fair to enable it very closely to approximate ideal conditions. Its radius of action must of necessity be limited as compared to that of a prime mover. That radius is steadily increasing, however, and now easily meets the requirements of municipal transportation service. Wagons in use by some of the largest express companies of the country leave the stable in the morning and do not come back until night, attaining in the meantime a mileage far in excess of what the horse can accomplish.

I very much doubt if the average man in this busy world realizes to how great an extent the electric automobile has quietly crept into our midst and as quietly proceeded to do the work called for.

Several hundred are in use in New York city alone for the transportation of passengers. Several hundred more are in use hauling merchandise for express companies, wholesale and retail houses of all kinds, brewers, general truckmen, hospitals, police departments, fire departments, electric light and telephone companies. One of the largest electric light companies in this country now uses electric automobiles for almost all of its service from the hauling of heavy machinery and cables of 5 and 6 ton weight to the light runabout service of its inspectors and superintendents. The satisfaction given can best be measured by the fact that their equipment is constantly increasing. Here sentiment has no place—dollars and cents again settle the question.

Then there is the doctor. He must have a vehicle ready to start off at a moment's notice without any question. It must be clean and require no attention likely to soil his clothes or hands, and he must be able to leave it out cold nights without any misgivings. Hundreds of physicians are now finding out what a great comfort their electric machines are. They can cover twice the distance they formerly could in a morning of calls and that without the expense of a driver, an indirect but very material return to the credit side of the account that is usually overlooked. My own family physician has become so wedded to his machine that if for any reason it is not available for a day he hires another automobile at so many gold dollars an hour in preference to using a horse.

The street superintendent, the fire chief and the electric light inspector all find that their quiet, ever ready, simple electric meets their requirements as they had not supposed an automobile could.

The touring field has been invaded lately as noted before. No difficulty whatever has been experienced in traveling from Boston to New York and getting charging current along the way. This may not appeal to the mile-a-minute man as ideal touring, but to the average man who wants to go comfortably and take his ease it is an attractive proposition. Sixty to 75 miles in a forenoon or an afternoon is about as far as most people care to ride without stopping a few hours to limber up. Just as soon as the public demand such a car it will be forthcoming, and now that the public knows it's available it is beginning to call for it. I know of one large electric touring car being built today along lines closely following the successful construction of the gasoline touring car. To all outward appearances it will be a standard gasoline car. It will, however, be free from noise, vibration and odor. It will be a

veritable white ghost de luxe and its owner ought to have an unlimited amount of pleasure in using it. There will be more and more of these cars built and I venture to predict that the average observer will become as callous to them before long as he always does towards everything novel.

A list of the applications of electricity to the automobile would be incomplete without reference to what have come to be known as "combination systems." Here in general we find a small portable central station including prime mover, dynamo, motors and sometimes the storage battery. The presence or absence of the storage battery divides these systems into two distinct classes. Where the storage battery is used it would seem as if little had been gained, as the prime object of the use of the engine and dynamo would naturally be supposed to be the elimination of the storage battery for long haul work. Where the storage battery is not used the dynamo and electric motor become simply a flexible transmission system eliminating the change gear systems in use on the straight gasoline car. As a transmission system, pure and simple, the electric cannot be equaled and its very simplicity and ease of control may yet lead to its use on a large scale. So far, however, very little practical use has been made of the system here or abroad. The Fischer system here and the Lohner-Porsche in Europe are the only ones ever put out in real practice. The efficiency is low as a transmitter of power, not over 50 per cent of the engine power being available at the rim of the wheel on extreme overloads. There is one field, however, where the combination system fits in remarkably—four-motor drive for long haul work. The engine and dynamo give a storage battery of practically unlimited radius of action and the electric motor as before noted makes an ideal form of four-motor drive.

Another form of electric propulsion being used abroad quite a little is known as the trackless trolley where an electric automobile minus the storage battery takes its power from a pair of overhead wires. It is rather surprising what flexibility of travel such a machine possesses. It is not confined to a path immediately below the wires, but can wander quite a ways each side and get along through traffic quite readily. As a feeder to regular trolley lines or on locations where traffic will not at once bear the expense of track installation this system offers a ready solution to the transportation problems. We are sure to see it used quite a good deal in the future.

Just lately another system has been brought to the front and the first equipment is now being installed. It is primarily an electric train for traveling over common roads and hauling heavy merchandise long distances. It consists of a forward or pilot wagon carrying a gasoline engine of large power and a dynamo, and of several trailers, each equipped with a pair of electric motors getting their power from the dynamo up forward and being controlled from the cab, as it were. It is comparatively cheap to construct, ought to be cheap to maintain and should give good results in many instances. The actual horsepower required at the rim of the wheel would be much in excess of that required on steel rails, but fuel is one of the smallest items in transportation. Interest on investment and sinking fund largely exceed it generally.

The most frequent question of the intending purchaser is: **What will it cost me to run the machine?** This is a question about which there is a deal of misunderstanding. Hastily drawn conclusions or conclusions drawn from incomplete data are too often applied to the general question. This is a dangerous proceeding regarding any new thing and the automobile is no exception.

I should very much like to go into this matter of operation in detail and show how it should be considered and just what may be expected. It deserves consideration in a separate paper, however, and I hope before long to go into it thoroughly and try and show that a few formulas can be deduced for simplifying the consideration of the question. We will instead devote our time to a general discussion of the question and then briefly show by some curves a few interesting facts concerning cost of operation.

One man will tell you with great glee that his machine did not cost him a cent except for current expenses for the entire season. Another will tell of a depleted bank account and no satisfaction to balance it up. Consequently, the average individual forms a very unpleasant opinion of all men's veracity and a very decided opinion of the uncertainty of the automobile.

Now the facts are these: Of two identical



equipments, operated under similar conditions in the same town, one is expensive to operate and the other inexpensive. Just one cause for this—the care given to the vehicle and the way it is operated; in other words, the personal equation. The same results are seen in the wear and tear on horses. But we have become callous to the dumb animals' maltreatment and pass it by. Why some purchasers spend from \$1,000 to \$3,000 for an electric carriage containing a battery and one or two electric motors and then blissfully jog along without giving the vitals of their investment but very scant attention is a mystery. But they do it right along. They seem to think the thing ought to look out for itself and come around to their office and demand attention when needed. The fact that the whole affair is so quiet and docile and does not "holler" and squeal when neglected results in further abuse. Very soon the owner becomes a pessimist and the automobile gets blamed, per se. The same general principle applies to the steam and gasoline automobile, but in each of these cases the evidence of mechanism is so apparent there are so many reciprocating parts to rattle if they get loose and bearings to squeak if not oiled that the owner is compelled to give them attention for his own piece of mind. Some one ought to invent an attachment to a storage battery to hit the operator over the head every third time he exhausts his battery down to the last gap or does some equally fool thing.

I have enlarged upon the above facts simply to emphasize that the personal element enters more largely than is generally supposed into the success or failure of an automobile.

One need not forsake his family and his friends and move into the stables, but he must get to understand it, to know its limitations, to know how to avail himself of its advantages, before he can get satisfactory results.

You have doubtless already been told by the motor and battery experts just how these parts of the machine should be looked after. So I shall not attempt details. Let me simply emphasize the absolute necessity of a complete understanding between the man and the machine to get good results. Some owners and operators have scarcely a bowing acquaintance with their machines.

What has been said above bears particularly upon the private or pleasure vehicle where the owner is most often the operator.

Turning now to the strictly commercial automobile a high order of intelligence cannot be hoped for in the operator, and hence the machine must be made to withstand its punishment on the road as it comes along. Care at the stable, however, is just as imperative as in the case of the pleasure craft.

The success of the commercial automobile depends upon two main points: 1—adequate equipments; 2—intelligent inspection and care. The trolley car or the locomotive receives no attention on the road, but upon its return to the barn or roadhouse it is watched with extreme care. So it must be in the case of their comrade, the commercial vehicle, if success is to be expected.

In the electric vehicle there are only three vital organs—the battery, the motor, the tire. Automobile builders have sometimes yielded to the demand for low initial cost and have skimmed on these items. Result—short life, great expense of operation and dissatisfaction. There is a certain safe lead that a Pullman car axle can carry continuously with safety. Increase this load seriously and great reduced life of the axle results. Similarly a given storage battery can do a certain amount of work continuously at a reasonable maintenance expense. Overload it and the length of life comes down and the cost runs to prohibitive figures. Just so the 3½-inch tire may fall in a few months with a bad showing of perhaps 10 cents a mile as tire cost, while the 4½-inch tire would do the same work at not over 1 cent a mile. It is difficult to impress this fact upon intending purchasers, but the company which refuses to underequip its vehicles will win in the long run. The public must look further than initial investment and realize that a little increase in initial investment may buy an insurance



against short life and high operating expense. It certainly cannot be challenged that a man is exhibiting good judgment if he puts \$2,500 instead of \$2,000 into an automobile if he can reduce his operating expenses per mile 50 per cent.

I doubt if I have yet laid anything like adequate stress upon the absolute necessity of adequate equipment. The popular tendency towards lightness in automobile construction is all right if it does not go too far. But like such tendencies, the pendulum is apt to swing too far. And as regards battery and tire equipment on commercial automobiles the pendulum has undoubtedly swung too far and some good people have been hit by it. There are now, however, indications that the customer is coming to his senses and there is a chance for good conservative engineering to make itself felt and not be negated by enthusiastic and sometimes not overscrupulous sales management.

The other element of importance in this consideration is care of the vehicle at its home station. Intelligence must be exercised here and the company which places the care of its vehicles in the hands of some jehu who knows a positive from a negative plate only while the tag is still on will soon join the disgruntled minority who believe the electric automobile is a snare and a delusion. Delivery wagons can be built and are usually so built that the teamsters formerly employed can be transferred to the automobile and get along all right with little or no experience. The man in charge of the vehicle, however, whose duty it is to keep the batteries in shape and give them the regular attention they require must have brains and practical experience with batteries and motors. He need not be a retired college professor or even the possessor of an B. S. But he must know what he is about. As you have been told all about batteries I cannot attempt to tell you what to do to them to make them a fair return on their investment. I can simply emphasize again the fact that too small battery, tire and motor equipment means failure, and that adequate equipment coupled with adequate attention means success.

Coming now for a moment to the actual cost in dollars and cents, I have laid out a little chart showing the cost of recharging the various oxide batteries under service conditions and at varying rates of current cost per kilowatt hour. To figure the total cost of operation of electric automobiles requires that a great many items be reconsidered.

They may be grouped and condensed as follows:

A—Interest on original investment.

B—Depreciation.

C—Cost of maintenance.

Interest on investment is a simple matter. Depreciation is not so easy. Correctly to get at this matter we must first understand that battery and tire items are not included here, as they are charged off under maintenance. This leaves only the motors, controller and the general wagon proper. It can be shown that these bear a fixed ratio to each other and their rate of depreciation is fairly well known from past experience.

Maintenance includes current repairs to the battery and renewals of plates at which time the battery is as good as new. This is why the battery may be said to suffer no depreciation. It includes also tire repairs and the renewals of worn parts, at which time the tire is also as good as new. Also general repairs to the wagon proper. This is a well known percentage from past experience. Also cost of charging current. This can be closely calculated.

Thus it can be shown that by a suitable dissection of the elements of an electric we can practically deduce a formula which can be made to read in the form ax by cz. We cannot stop now to go into the full detail of such a formula. The cost may be reduced to two bases, the cost per vehicle mile and the cost per ton mile of merchandise hauled. The cost per vehicle mile increases directly with the size of the vehicle. The cost per ton mile decreases at first rapidly and then slowly as the size of the vehicle increases until at about 5 tons capacity would seem to lie the economical limit of the size of the storage battery electric truck. It appears that for general delivery purposes, where the expense of operation can be figured by the owner, only one, the basis of vehicle miles, the load being too small or irregular to estimate closely, a small machine is best and most economical. While for the general transportation of merchandise in heavy work the larger the unit up to about 5 tons capacity the better.

On the score of efficiency there are two ways of looking at the question: 1—How much do different systems cost? and 2—what is the comparative satisfaction they give? One might do its work at a slightly less cost in actual dollars and cents, but it might be so obnoxious as to be unbearable, while another at a higher figure might prove satisfactory all around. There is absolutely no data available as to the relative cost of differ-

ent systems for commercial vehicles, nothing but electricity having been used enough to yield any data.

Some two years ago the Automobile Club of America held a 50-mile non-stop endurance run, in which the amount of gasoline and water used by the contestants was accurately reported. One electric was entered and from the performance of these three types under similar conditions the actual cost of the power used can be figured fairly closely. Figuring the cost of gasoline at the time at 10½ cents per gallon in barrel lots: lubricating oil for both gasoline and steam engines at 30 cents per gallon, and current for the electric at 4 cents per kilowatt hour we have the following table of relative costs reduced to a common basis of moving 1,000 pounds one mile:

Steam, using flash boiler.....	.52 of a cent
Gasoline .....	.42 of a cent
Electric .....	.50 of a cent

It will be thus seen that on a basis of converting dollars directly into horsepower at the rim of the wheel the electric is intermediate the steam and the gasoline. This, of course, considers only the one item of fuel supply.

Now, briefly summing up the points which we have attempted to bring out, we will call your attention to the following general items: The electric automobile is one of the oldest in the field and was the first form to be reduced to practice on a large scale and placed upon the market.

The requirements of an ideal power system for pleasure vehicles are: Comfort, reliability, simplicity, cheapness. For commercial vehicles they are: Cheapness, reliability, simplicity.

The electric system meets these requirements admirably on account of its quietness, absence of vibration and odor; on account of the inherent advantages of the electric motor such as its wonderful overload capacity; its automatic adjustment of load and speed; its rotary motion, and its resistance to damage in unskilled hands. The electric system is of almost unlimited application from the lightest runabout to the 5-ton truck for passenger and goods transportation.

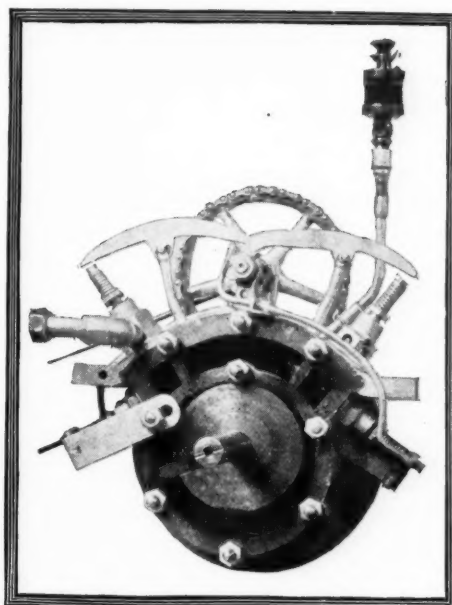
The success of the machine in private hands depends primarily upon the good sense and judgment of the operator. The personal element is the principal one. The success of the electric business wagon depends upon adequate equipment and intelligent care.

## THE FIELD OF MOTOR CAR DEVELOPMENT

One of the most interesting mechanical novelties at the Cleveland show was the working model of a rotary gas engine which was designed and exhibited by Otto Konigslow, manufacturer of automobile materials at Cleveland. Mr. Konigslow has been working for many months on the device, and while he does not claim it is perfected, he maintains that it is thoroughly practical and possessed of a number of advantages over the ordinary reciprocating type of gas engine. Many of the numerous experts who examined the machine during the week were greatly impressed with his invention and were inclined to agree with his views.

The engine, which is here illustrated, was designed simply as an experimental model and a number of changes have already been suggested which will be worked out in future machines. The cylinder portion is a circular casting about 8 inches in diameter and 4½ inches wide, outside measurements. The piston is a solid piece about 6 inches in diameter, with a shaft through the center and is set in the upper portion of the cylinder, leaving a crescent shaped opening below which about corresponds to the displacement of a 6-inch stroke in a reciprocating engine. The piston is provided with a single blade which is held outward by a spring, and in revolving it follows the eccentric formed by the cylinder.

Above the cylinder and made as part of the

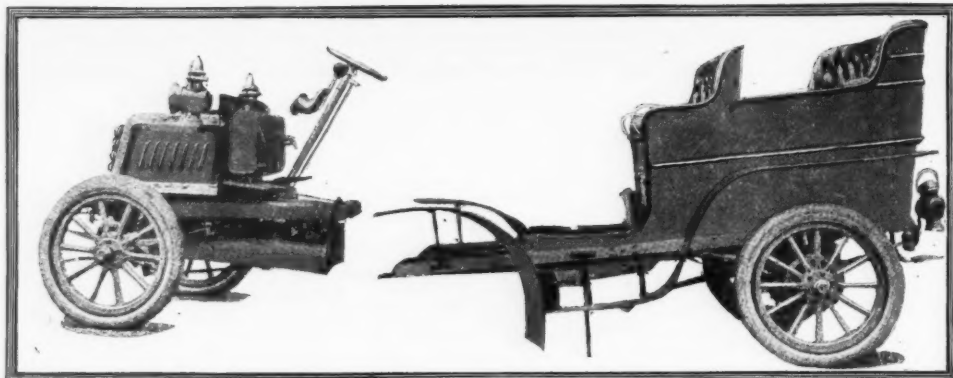


MOTOR AGE THE KONIGSLOW ROTARY MOTOR

same casting are three chambers. Looking at the motor as shown in the illustration, the chamber on the left is the intake chamber, that on the right is the exhaust chamber, while the one in the center is the compression chamber. From the exhaust chamber and from the intake chamber leading into the cylinder are ports which are never closed, while in the compression chamber leading into the two outside

chambers there are ports which are provided with valves. Above the inlet chamber is an inlet valve and above the exhaust chamber is an exhaust valve. All four valves are operated by cams on a timing shaft over the cylinder, the shaft being driven by chain and sprockets geared three to one.

Starting with the piston blade at the port leading into the intake chamber, as the blade passes that port, the intake valve opens and the charge is drawn into the cylinder until the latter is completely filled. As the blade passes the intake port again, the intake valve closes and the mixture is forced around by the blade, through the port into the exhaust chamber, and from there through the valve into the compression chamber, where it is compressed. As the blade passes the port on its third revolution the valve from the compression chamber into the intake chamber opens, and the compressed gas passes through the port into the cylinder and at this instant it is ignited by a spark in the usual manner, the spark plug being in the center of the compression chamber. The back part of the piston adjoining the blade is cut out so that the expanded gas strikes on a considerable surface and the piston is given its impulse. As the piston comes around the fourth time, a new charge is drawn in, and the exploded charge is forced around and out through the exhaust valve, completing the cycle. The movement of the piston is accelerated by



THE LACOÏN SEPARABLE DARRACQ

an ordinary fly wheel on the main motor shaft.

Mr. Konigslow is undecided whether to call his invention a three-cycle, a four-cycle or a six-cycle gas engine and the experts who have examined it do not appear to coincide on this point. But the fact remains that it goes, and that it seems to possess a number of advantages over the ordinary style of gas engine. The present model has a maximum speed of 1,600 revolutions and it is estimated to develop  $3\frac{1}{2}$  horsepower. No method of cooling was provided on the model, but it has been run 20 minutes in a closed shop without overheating. There is no vibration to the motor; resting on a light framework, it has been run without holding down bolts and without movement of the frame. The speed of the motor may be controlled within certain limits by varying the amount of mixture and changing the time of the spark, but under the latter method the conditions are exactly opposite those existing in a reciprocating engine. On the ordinary four-cycle reciprocating gas engine, the farther the spark is advanced, up to a certain limit, the greater the speed, while on the Konigslow engine, after the gas is compressed, the nearer to the point of highest compression the greater the speed, and the farther away the less the speed; hence the highest speed is obtained by holding the spark rather than by advancing it. The small size, compactness and light weight of this motor are obvious. Mr. Konigslow is preparing to build a water-cooled motor of this type which will be designed to develop 10 horsepower and he plans to fit it to an automobile. He may decide to place two motors in a car and operate them in multiple from the same shaft. In the larger motor which will be built, the face plate will be made with a groove fit to prevent leakage. In the present model, the cover and face were ground and rubbed for perfect accuracy and there was no leakage.

#### A DIVISIBLE CAR

Almost as early as the beginning of motor cars has there been experiment in the line of complete motor tractors which might be adapted to the propulsion of any kind of an after carriage. The proposition has been elusive and alluring to inventors, this proposition of the mechanical horse. It has been the incentive for the production of all sorts of freaks as well as of doubtfully or fairly practical devices. Commercially the tractor has never gained much headway, owing, no doubt, to the fact that a fore truck large enough to carry the whole mechanism of a car is so unwieldy and so unsightly that the rig produced by its use would be ugly even if efficient.

That the tractor has utility, however, cannot be denied, for it represents one of the simplest

ways of rendering a motor car interchangeable in form, to correspond with changes in the purpose of its use. It represents the change of a brougham into a touring car by the manner equivalent to releasing a horse from the shafts of one carriage and harnessing him into those of another. It is probable that this same result may be obtained differently, by equipping a universal running gear with a variety of bodies, each independent of the working parts of the car and all quickly removable or attachable.

Giving the tractor proposition the benefit of the doubt, however, a scheme devised by one Lacoïn of somewhere in France, and brought into practical shape this season on a specially built Darracq car, becomes one of the most interesting developments of this branch of motor car construction. The Lacoïn system really represents a tractor, though in application it is more like the dividing of a motor car of ordinary construction into halves in such manner that a universal front half may be fitted to any of a number of different rear halves, the front half representing the power plant and the rear half the coach or body section.

There is no attempt to make the front truck the traction truck. It is simply the front portion of a chassis of ordinary construction, carrying the motor, transmission gear and controlling mediums and insertable quickly into a rear frame which carries the body proper and the driving wheels, the power connection between which and the motor is made through a propeller shaft with readily detachable coupling.

The car, when assembled—or coupled—is apparently a regular car, the evidences of its divisibility being hidden. It is certainly clever. Its merit rests upon two things—the necessity of such construction as opposed commercially to the universal chassis with several bodies,

and the strength and rigidity of the separable frame.

The front wheels support a sort of sub or inner rectangular frame, upon which are mounted the motor and transmission gear and various other parts of the power plant. This is inserted between the side bars of the rear frame and held in place by four special bolts, one at each corner. Each of these bolts consists of a shank with a rectangular head, so that by giving the bolt a quarter turn, the retained part may be slipped over the head. The shank is provided with a handle to allow this turn to be made without using a wrench, while a stout coil spring under the taper seat of the coupled parts is supposed to always keep the bolt under sufficient tension to render the joint self tightening.

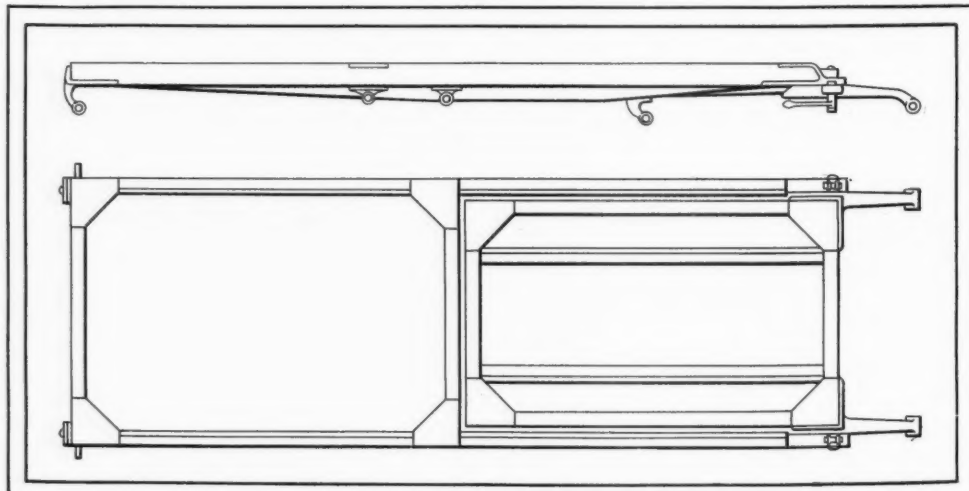
The coupling in the propeller shaft is also separable manually. It comprises a pin joint the head of whose pin has a head with two flat rectangular shoulders, one above the other. One seat engages a stationary lug or ear on the yoke member of the coupling, while the other engages a spring retained catch which normally presses against its lower face. By pressing downward with the hand on this catch the pin is loosened and may be given a half-turn, so that both rectangular shoulders are freed from their respective catches. The pin may then be drawn out, separating the two members of the joint.

If all of the elements of the power plant are carried on the front truck no other couplings are necessary between the two parts of the car, but if the gasoline or water tanks, muffler or any other parts whatsoever that relate to the motor are carried on the rear part, suitable couplings must be provided and it is possible that more difficulty would be experienced in rendering these both secure and conveniently separable than in the case of the propeller shaft coupling.

#### PISTON RING GRINDER

As one may readily understand, the fitting of the rings in the piston of a gasoline automobile motor is a matter of considerable importance and of no little skill. Piston rings are really double-seated check valves to prevent the escape of the gases in the cylinder and their fit in the piston must be exact when the motor is first assembled. Experience has shown that the power of an engine can be increased 5 to 10 per cent by having rings ground to fit the grooves perfectly where previously there was a loose fit.

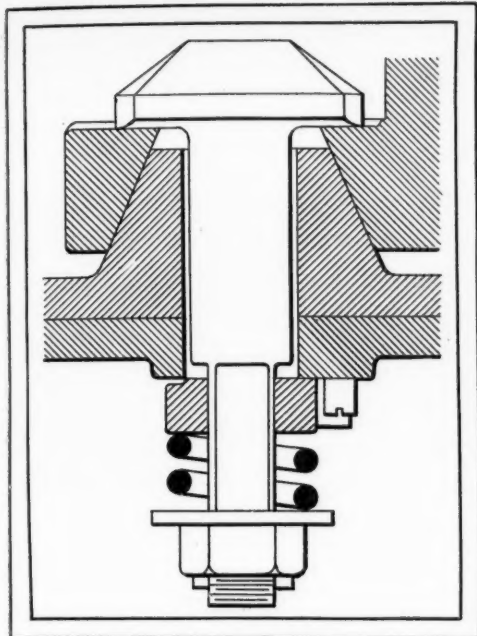
The Heald Machine Co., of Worcester, Mass.,



MOTOR AGE

THE LACOÏN DOUBLE SEPARABLE FRAME





LACOINE FASTENING BOLT

MOTOR AGE

has devised and now builds a piston ring grinder which is not only intended to give piston rings an accurate finish, but to also save time in manufacture.

In fitting piston rings it is easy enough to make the grooves all of a standard width and nicely finished, because the pistons are comparatively heavy and rigid and are large enough to be easily handled. But with the rings it is different. These are usually cut off several at a time from a cylinder which has been turned to an approximate size. The edges of these rings, as they come off the cylinder stock, are somewhat rough and the rings are naturally over-size. The difficulty of finishing them well and accurately lies a good deal in the difficulty in holding them during the finishing operations. Hence the machine of the Heald company is built around a magnetic chuck, on which the rings may be laid and ground to the required thickness. This process obviously results in a truly flat surface on each side and in a uniform width of ring at all points in its circumference.

The magnetic chuck for holding the rings during grinding is mounted on a vertical spindle with micrometer adjustments, indicated by a graduated hand wheel. The chuck is driven by a set of gears inside the machine body, where they are protected from dirt and injury. The cone driving pulley with a number of grooves gives a variable speed for the chuck and allows simple adjustment of speed to correspond to different sizes of work, so that the correct grinding speed may be maintained. The grinding wheel is mounted in a cross slide which can be traveled over the work by means of a hand wheel. A cross feed can be supplied instead, if desired. The grinding wheel may be fed to the center of the chuck, so that if it is wished the grinding of such pieces as disks, thrust collars, dies, etc., may be readily handled on the machine.

The column of the machine is made in two parts and provided with an adjusting screw, so that correct alignment of the chuck can be maintained and the machine made to grind absolutely flat surfaces at all times.

In the matter of speed in operation the makers say the machine can finish rings on both sides and of a standard thickness at the rate of fifty an hour. This speed has been approached

in experimental grinding of sample rings a few at a time and to fit pistons sent as guides. With a regular lot of work ground to a standard gauge the maker believes fifty an hour is a conservative estimate.

The grinder is certainly an interesting piece of automobile making machinery.

#### MOTOR MISCELLANY

John C. Wood, who was a potent factor in the cycle trade of Washington in the palmy days, has entered the automobile trade, and is now connected with the National Capital Automobile Co.

Mrs. E. J. Pennington, wife of the general manager of the Cleveland Motor Co., of Cleveland, O., died of pneumonia at Cleveland last Friday. She was formerly Miss Alice Butterfield, of Milwaukee, Wis.

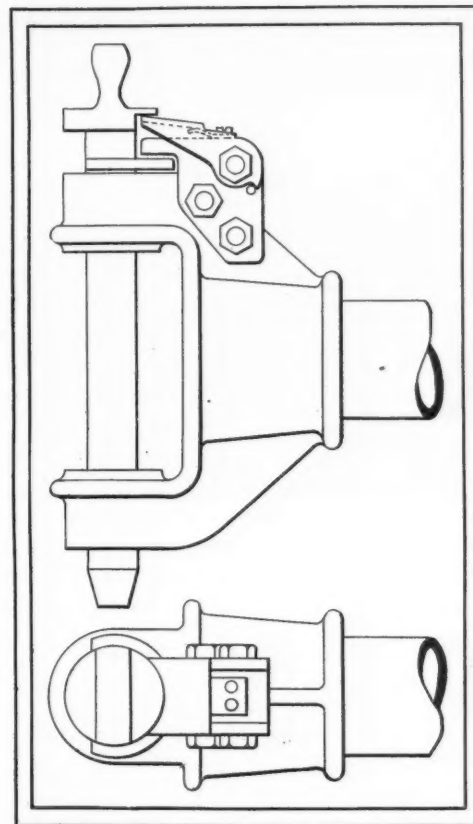
The German Automobile Club has chosen a road passing through the villages of Lubscherbrunn, Schmalbeck, Lobacheck, Muhlenbachack and Hennstedt for the German trial races. The circuit will measure about 32 miles, and is located near Itzehoe.

Charles L. Seabury & Co., of New York, have opened a western office in Chicago, with Dan B. Southard as western representative. The concern will send a motor boat westward which is due to arrive in Chicago April 15. It is said to be capable of covering 21 miles an hour. The Chicago house will also sell Howard automobiles.

A number of men and officers of a regiment of German engineering corps are making experiments with two motor cycles, two tourist cars and two automobile trucks in the Harz district, which is very mountainous. The tests will last 2 weeks and are being made to determine the efficiency of motor vehicles in mountainous country.

The Lozier Motor Co., of Plattsburgh, N. Y., and Jersey City, N. J., is turning out a racing boat 25 feet long which will weigh, with the motor installed, less than 1,000 pounds. The motor will develop from 24 to 30 horsepower at 1,000 revolutions and will turn an 18-inch wheel. The estimated speed is better than 20 miles an hour.

"It will be no fun," recently said a Belgian driver, "to drive in the cup race. It will be hard work, and for my part I am going to put on the very best kind of brakes I may be able to find. Careless driving will be out of the question, because the course is danger-



MOTOR AGE

LACOINE PROPELLER SHAFT JOINT

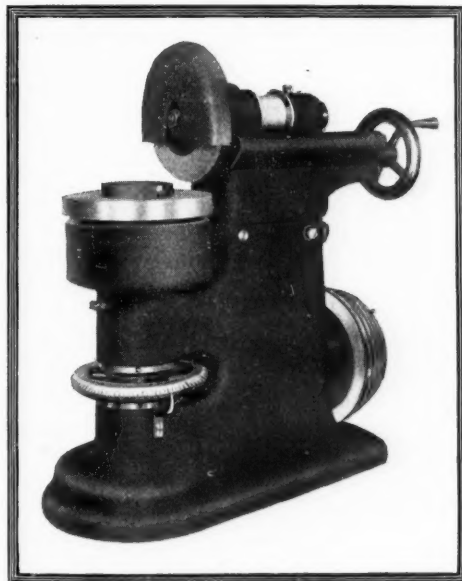
ous and the few straight stretches don't seem to me to allow anyone to take a great lead. I believe the driver who will have the least accidents will have the best chance to win."

The address of John Farson, president of the Chicago Automobile Club, on "Good Roads the Nation's Salvation," delivered at the American Motor League banquet at the Victoria hotel in Chicago on Lincoln's birthday, has been published in pamphlet form and is being distributed throughout the country by the New York and Chicago Road Association.

The capital stock of the A. L. Dyke Automobile Supply Co., of St. Louis, Mo., has been increased to \$25,000, paid in, and a charter has been granted by the state. The officers of the company are A. L. Dyke, president and manager; Robert Britton, vice-president. Plans for increasing the business have first taken definite shape in the securing of all of the building in which the company is located, but half of it being previously occupied.

Automobile driving has become a popular pastime on the ice on the Hudson river this winter. The surface is rough as a rule, owing to the snow. The smooth spots cause occasional skidding, which is not dangerous and adds only spice to the sport. The resistance is insignificant and high speed easily possible. An Autocar recently easily negotiated 9 miles on the ice in 15 minutes. A tour from Poughkeepsie to Albany is intended by local clubmen.

The Automobile Club of France has requested its official timekeepers to produce an observatory certificate, showing that their chronometers have been examined within the past three years. Only certificates from the observatories of Besancon, France; Kew, England, and Geneva, Switzerland, are recognized by the French club. Most of the timekeepers have raised a protest against the decision, claiming it is unnecessary to have chronometers examined so often, and furthermore say that the expense connected with the examination is greater than they wish to stand.



MOTOR AGE

THE HEALD PISTON RING GRINDER

# FROM THE FOUR WINDS



The Raneleigh Club, of London, England, will hold its automobile races on Saturday, June 11.

The Bullock-Beresford Mfg. Co., of Cleveland, O., has decided to increase its capital stock to \$100,000, and has issued a call for a meeting for that purpose on March 28.

A Rambler show room has been opened in Milwaukee, Wis., by Thomas B. Jeffery & Co., with Mark W. Heath in charge of the sales department. The establishment is located at 312 Wells street.

King Edward of England is the owner of seven automobiles, five of which are of British make. One of the cars is an omnibus, seating fifteen persons, another is a heavy truck, while the others are touring machines.

The Schaum Automobile Storage & Repair Co., of Baltimore, Md., manufacturer of the Schaum spark plug, is incorporating a \$250,000 company and wishes to locate in some progressive city desiring a factory in the automobile line.

James Levy has resigned as secretary and treasurer of the Githens Bros. Oldsmobile Co., of Chicago, and on March 1 assumed the management of the automobile department of the Mead Cycle Co. The Mead company now handles the Benz-Parsifal and Orient, and other machines will probably be added this spring.

A prominent automobile manufacturer has received a letter from an anxious inquirer in Mobile, Ala., saying that his social club intends to give a masked character ball, and he would like to know the correct costume for a chauffeur to wear. He asks what would a pair of goggles cost, and then adds in parenthesis that the goggles are for the eyes. As an afterthought he writes a postscript asking if boots or shoes are worn.

The executive committee of the New Hampshire Automobile Club has decided to purchase the Leonia property at Hampton beach. The site is on a slight eminence overlooking the entire New Hampshire coast line. The estate consists of 15 acres, most of which is graded and laid out. On the grounds is a large barn 80 by 150 feet, two and one-half stories high, a water tower, artesian wells and a drainage system. The buildings are surrounded by magnificent pine trees. The estate was fully described in MOTOR AGE some weeks ago. The club house which the committee has decided to

build will not cost over \$5,000, the amount having already been raised. It is hoped to have the club house completed by Decoration day.

Alex Schwalbach, an occasional contributor to the motor vehicle papers on technical topics, has been offered and accepted the editorship of Automobile Topics, which will become vacant by the retirement of James P. Holland on April 1.

The city roads committee of the A. C. A. is to make a systematic tour of New York's asphalt streets and note the places where repairs are needed. Mayor McClellan will be asked to make these repairs and also petitioned to see that asphalt approaches to the ferries and the new Williamsburg bridge be provided.

George H. Jackson, United States consul at La Rochelle, France, has received an inquiry for prices on small electric motors, which should be of from 1-12 to 1-10-horsepower. They must be very compact and be able to run in either direction. Prices should be submitted for sample of one, also in lots of 100 to 1,000.

At a meeting of the Boston Automobile Dealers' Association, held last week, it was unanimously voted that for the protection of those who have purchased space at the Boston automobile show, no firm or individual other than those having exhibition space should be allowed to solicit business in the hall during the continuance of the show, except on payment of the sum of \$50.

There is considerable dissension among the members of the Automobile Club of Great Britain and Ireland over the manner in which the club has been managed, and a reform movement has been started. If the reform movement fails it is said a large number of the members will resign and start another club free from the objectionable elements that have placed the club in its present unfortunate condition.

According to an English trade paper, the Society of Motor Manufacturers and Traders has decided that next year's show will be exclusively confined to motor cars and their direct appurtenances. It will thus become necessary to hold a separate motor cycle exhibition, and it is suggested that the Motor Cycle Traders' Association organize this show independently from the annual Crystal palace and Agricultural hall shows.

Santos-Dumont has been elected an honorary member of the A. C. A. Among the associate members recently elected are: Dr. Charles Wood McMurty, Vienna, Austria; Robert H. Comstock, Ivoryton, Conn.; Charles G. Burgoyne, Daytona, Fla.; C. J. S. Miller, Franklin, Pa.; John A. Wilson, Franklin, Pa.; George B. Leighton, Monadnock, N. H.; John C. King, Chicago; R. S. Munger, Birmingham, Ala.; George Hamilton Flinn, Pittsburg, Pa.;



John Farson, Chicago; J. M. Lansden, Birmingham, Ala., and Howard Riegel, Riegelsville, N. J.

The motor cycle endurance run from Turin to Beilla and return, a distance of about 110 miles, was won by Guippone, on a Peugeot machine, in 4:33:30. Pechacek on a Republik was second in 4:45.

The Automobile Club of Great Britain and Ireland has resolved that the word "chauffeur" shall be dropped and the word "motorman" adopted in its place, and also that "garage" shall be succeeded by "motor house."

The motor cycle has been brought into service for carrying the mail by C. L. Clayton, a rural route carrier at Wellington, Kan. This is the only motor cycle in the rural mail service of the state.

The automobile is rapidly growing in favor among the people of Salt Lake City, Utah. There are now about twenty machines in the city, and the prospects are favorable for a large sale this year of both pleasure and commercial vehicles. The automobile club is prospering and is planning a number of excursions for the coming summer.

The Joliet Automobile & Garage Co., of Joliet, Ill., has been organized with a capital stock of \$25,000. About seventy of the business men of the town are financially interested in the company. The directors are H. A. Fisher, F. E. Fisher, L. D. Fisher, E. S. Munroe, A. C. Dillman, H. F. Peppinbrink and C. C. Wilcox. The company is looking for a location to erect a building, and until a site is chosen it will occupy temporary headquarters and establish itself for the spring trade.

Dr. E. M. Eisenbeiss, of Indianapolis, Ind., has discovered that an electric automobile has other uses besides that of hauling people across country. He uses it to run the surgical apparatus in his office, finding it particularly handy in operating his x-ray machine. The doctor is contemplating the construction of appliances small enough to be carried around to the houses of his patients. He explains that electrical apparatus is often desirable when a patient is unable to visit the office. By means of his electric automobile power he can operate in their homes. "By driving my automobile up to a nearby window or door," said the doctor, "I can attach the wires and operate the apparatus in the sickroom. Most of my apparatus is too large and cumbersome to be



transported, but there is no reason why smaller and lighter contrivances might not be constructed."

❖ ❖

The Neustadt-Perry Co., 836 South Eighth street, St. Louis, Mo., has reorganized. The business will be continued at the same location and on a more extensive basis. The name, however, becomes J. H. Neustadt Co.

❖ ❖

Among catalogues the new one of the Locomobile Co. of America, of Bridgeport, Conn., describing the Locomobile gasoline cars, is an example worthy of emulation, for in the extent and carefulness of its descriptive data it much exceeds the ordinary catalogue.

❖ ❖

The board of trustees of the Dayton, O., Automobile Club was elected last week as follows: Dr. C. A. Bonner, C. B. Wolf, Albert Thresher, A. M. Dodds, Carl Baumann, Harry Cappel and John Kiser. The trustees will meet later and elect officers for the ensuing year. The clubs will hold a race meet July 4.

❖ ❖

Angus Sinclair, publisher of the Automobile Magazine, gave an illustrated talk at the A. C. A. on Sunday evening on "Automobiling in Scotland." It embraced the details of a ramble about the Mearns, the county of Robert Burns's ancestors, and of a trip from there to Edinburgh, journeying through a number of towns and villages of historic interest.

❖ ❖

It is reported that Albert Champion, the French motorist, who met with a severe accident at Brighton Beach, last fall, has become a demonstrator for the Packard Motor Car Co., of Detroit, and that he will probably be seen again on the Gray Wolf or some other racing machine made by the same company at automobile race meets this summer.

❖ ❖

The city council of Elkhart, Ind., has passed an ordinance limiting the speed of automobiles to 8 miles an hour, requiring them to be numbered by permit issued by the city, and to carry lights front and rear. Non-residents may stay in the city 10 days without a permit.

❖ ❖

At the last general meeting of the German Automobile Club, Victor von Ratibor was re-elected president; Prince Christian von Hohenlohe-Oehringen and General von Rabe, vice-presidents; General Becker, president of the technical committee; Count de Talleyrand-Perigord, president of the financial committee and also of the reception committee; Baron von Brandenstein, secretary general; Eugene Reis, president of the touring committee; M. von Kuhlmann, president of the club house.

Elmer De Pue, 46 East Van Buren street, Chicago, is displaying Buffalo electric cars at the salesroom of Pardee & Co., 1404 Michigan avenue.

❖ ❖

The Welch Motor Car Co., of Detroit, Mich., the object of which is to engage in the manufacture of machinery, engines, automobiles and other products, has been incorporated with a capital stock is \$50,000. Arthur Peck, of Orchard Lake, Mich., is the principal stockholder, owning 399 shares. George S. Hodges owns fifty shares and Allie R. Welch one share.

❖ ❖

P. J. Dasey has established headquarters at 435 Wabash avenue, Chicago, as selling agent for the Motsinger Device Mfg. Co., Auto-sparkers; Warner Differential Gear Co., differential gears, boat reversing clutches and steering wheels; the Induction Coil Co., Mueller spark coils; the Detroit Motor Works, Starite spark plugs; J. Lauth, single and double-cylinder horizontal motors; the H. L. Hoffman Motor Co., two and four-cylinder vertical motors; J. H. Wheeler, Schebler carbureters; Bock & Severin, circulating pumps.

❖ ❖

The United States Transfer Co., of Philadelphia, Pa., has decided to dispose of its horses and mules, over 1,000 in number, and replace them with sixty electric wagons. The company believes that with this number of electric wagons it will have a decided advantage over its competitors. Three of the wagons ordered by the company will be the largest ever built, carrying loads which formerly required the services of four horses with relays every 6 hours. The other wagons will have a hauling capacity of between 1,000 and 3,000 pounds. The company will spend about \$30,000 in remodeling its stables.

The Iowa legislature has passed a bill requiring that automobiles be registered with the secretary of state and limiting the speed at which they may be driven at 20 miles an hour in the country.

❖ ❖

The annual meeting of the Automobile Club of Philadelphia, Pa., will be held at the Manufacturers' Club on Monday evening, March 14. The ticket placed in nomination by the board of government is as follows: Henry G. Morris, Louis J. Kolb, H. Bartol Brazier, Ellis Ames Ballard, Isaac Starr, Jr., and Frank C. Lewin.

❖ ❖

Baron Joseph de Crawhez, on a 70-horsepower Panhard-Levassor racer, won the Sneden cup, near Alger, Africa, February 21. The distance was 1 kilometer, and the winner's time 32 seconds. De Malglaive, on a 45-horsepower de Dietrich car, was second in 57 3-5. He had an accident during his run. A kilometer race for tourists was also won by de Crawhez with a 24-horsepower Vivinius car.

❖ ❖

Judge Brown, of the United States Circuit Court at Boston, Mass., has dismissed the bill of Henry C. Folger and Harry Moriarity, representing the American Coil Co., against the Dow Portable Electric Co. The bill asked for an injunction to restrain the Dow company from alleged infringement of patent 696,670, issued to Folger, Moriarity and Edward B. Jacobson on April 1, 1902, for improvements in sparking plugs for electrically igniting the gas in explosive engines. The court held that the patent is void because it covers no invention in view of the prior act.

❖ ❖

At a hill-climbing contest on the Boulevard Perier, almost in the center of Marseilles,

France, thirty-nine of the forty-six competitors who had entered, started. From 25,000 to 30,000 spectators watched the tests. Most of the French manufacturers were represented, and the events were so thoroughly satisfactory that several similar competitions will be held during the summer.

❖ ❖

The Society of Draftsmen of the Automobile Industry is an organization formed in Paris a few weeks ago. The object of the society is to study the automobile trade in detail, through lectures and conferences, and to furnish manufacturers with competent draftsmen. The Syndicate of Selling Agents for Fittings

for Cycles and Automobiles, is another association recently formed in Paris, and not one of the least important among the already many existing. It is stated that these agents annually transact business amounting to over \$4,000,000.



MOTOR AGE

A THOMAS CAR PARTY NEAR BOMBAY, INDIA, WHERE GASOLINE IS SCARCE, BUT CHARMING SCENERY IS PLENTIFUL

The Shenango Valley Automobile Co. has been formed at Sharon, Pa., and will do a general business. The company is composed of Sharon men and the officers are: President, T. S. B. Wood; secretary and treasurer, E. C. Davis. Agencies will be secured.

# AMERICAN MOTOR LEAGUE

## OFFICERS:

ISAAC B. POTTER, President,  
Potter Building, New York.  
CHARLES E. DURYEA, First Vice-Pres.,  
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W. GRANT MURRAY, Second Vice-Pres.,  
Adrian, Mich.  
S. W. MERRIHEW, Third Vice-Pres.,  
154 Nassau St., New York.  
ROBERT L. STILLSON, Secretary,  
150 Nassau St., New York.  
FREDERICK B. HILL, Treasurer,  
32 Binford St., Boston.

National Headquarters:  
150 Nassau Street, New York

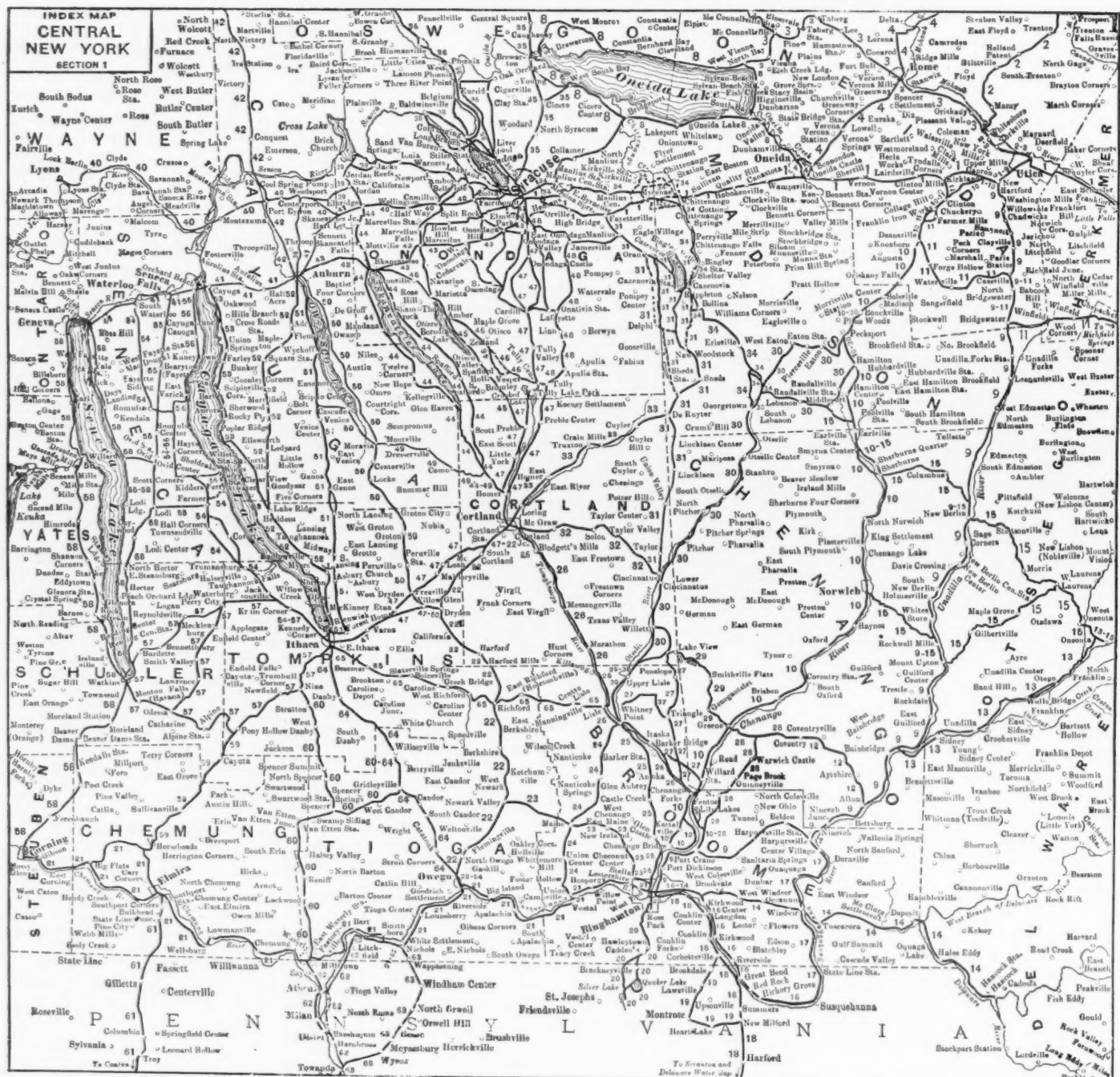


## CHAIRMEN OF NATIONAL COMMITTEES:

LEGISLATION—  
George R. Bidwell, New York, N. Y.  
ROAD IMPROVEMENT—  
R. E. Olds, Lansing, Mich.  
LOCAL ORGANIZATION—  
Charles F. Potter, Denver, Colo.  
TOURING—  
W. H. Baker, Buffalo, N. Y.  
TECHNICS—  
Charles E. Duryea, Reading, Pa.  
MEMBERSHIP—  
Frank A. Egan, New York, N. Y.  
SIGN BOARDS—  
John B. Price, Hazleton, Pa.  
RACING—  
A. G. Batchelder, New York, N. Y.  
PRESS—  
Joseph Estoclet, Philadelphia, Pa.  
HOTELS—  
Francis N. Bain, Newburg, N. Y.

## OFFICIAL BULLETIN

## THE AMERICAN MOTOR LEAGUE ROAD BOOKS



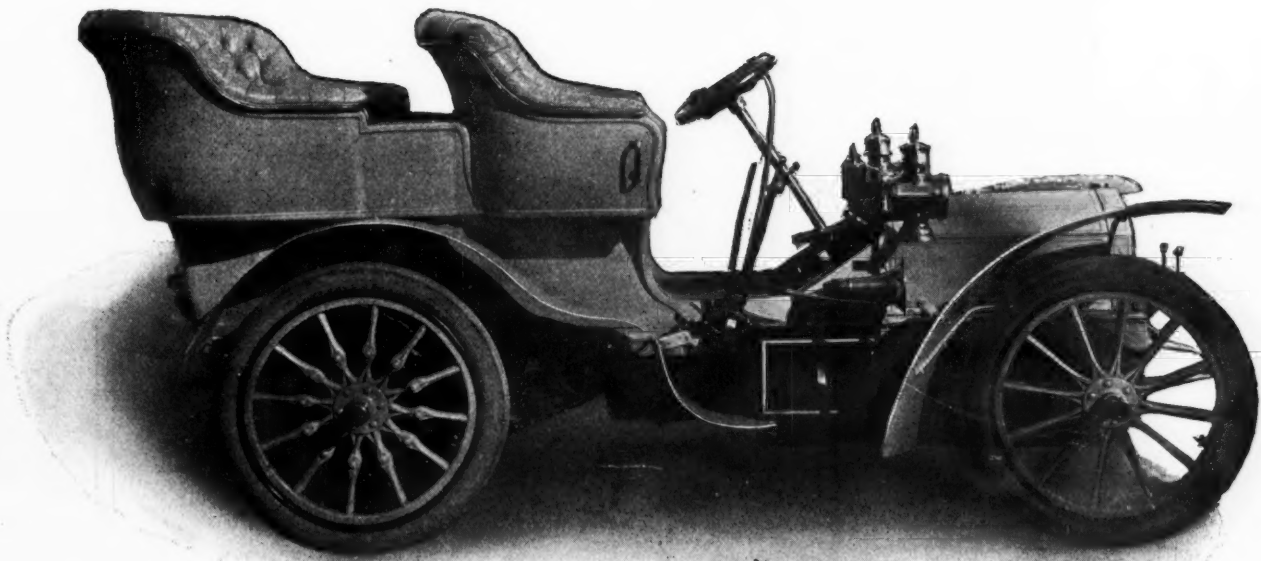
The New York road books—eastern, middle and western sections—are about ready for the printer. They cover about 14,000 miles of the best automobile routes in the state and extend eastward into New England and westward through New Jersey and into Pennsylvania. A more extended reference to this work, and to similar work planned by the league, will appear on this page soon. The map herewith is one of the section index maps, which in the road book is supplemented by detail maps of the different routes which are numbered in the index map. The rapid growth of the league means an early return of substantial benefits to its members. Let every member equip himself with a supply of membership blanks and do his share toward increasing the strength of the organization in his state.



"THE ARISTOCRAT OF AUTO CARS"

# F·I·A·T

**Automobiles**  
AND  
**Auto Boats**



16-20 H. P. CAR, WITH "KING OF BELGIANS" BODY.

The highest grade automobile manufactured. Made entirely in our factory at Turin, Italy, one of the best equipped on the continent. Motors 16-20 H. P., 24-30 H. P. and 60 H. P., fitted with four cylinders. All the popular styles of body are carried in stock. Special styles built to order promptly. By pressure on a simple foot pedal ignition is advanced and throttle opened simultaneously, in proportion to speed of engine. No other motor is so simple, no other combines so much speed and power with absolute reliability. Made for those who want the best.

**Hollander & Tangeman**

Licensed Importers Under Selden Patent

**5 West 45th Street**

**NEW YORK CITY**

**Sole Agents for United States and Canada**

# STEARNS



STEARNS 24-HORSEPOWER GASOLINE TOURING CAR

Our Policy is **IMPROVEMENT** Not Alteration

**Stearns Cars Can Be Seen, Not Heard.**  
**Remember the Record of No. 35 in the**  
**Endurance Run.**

*Write for catalogue and booklet describing the  
Endurance Run and return trip to New York.*

**THE F. B. STEARNS CO.**

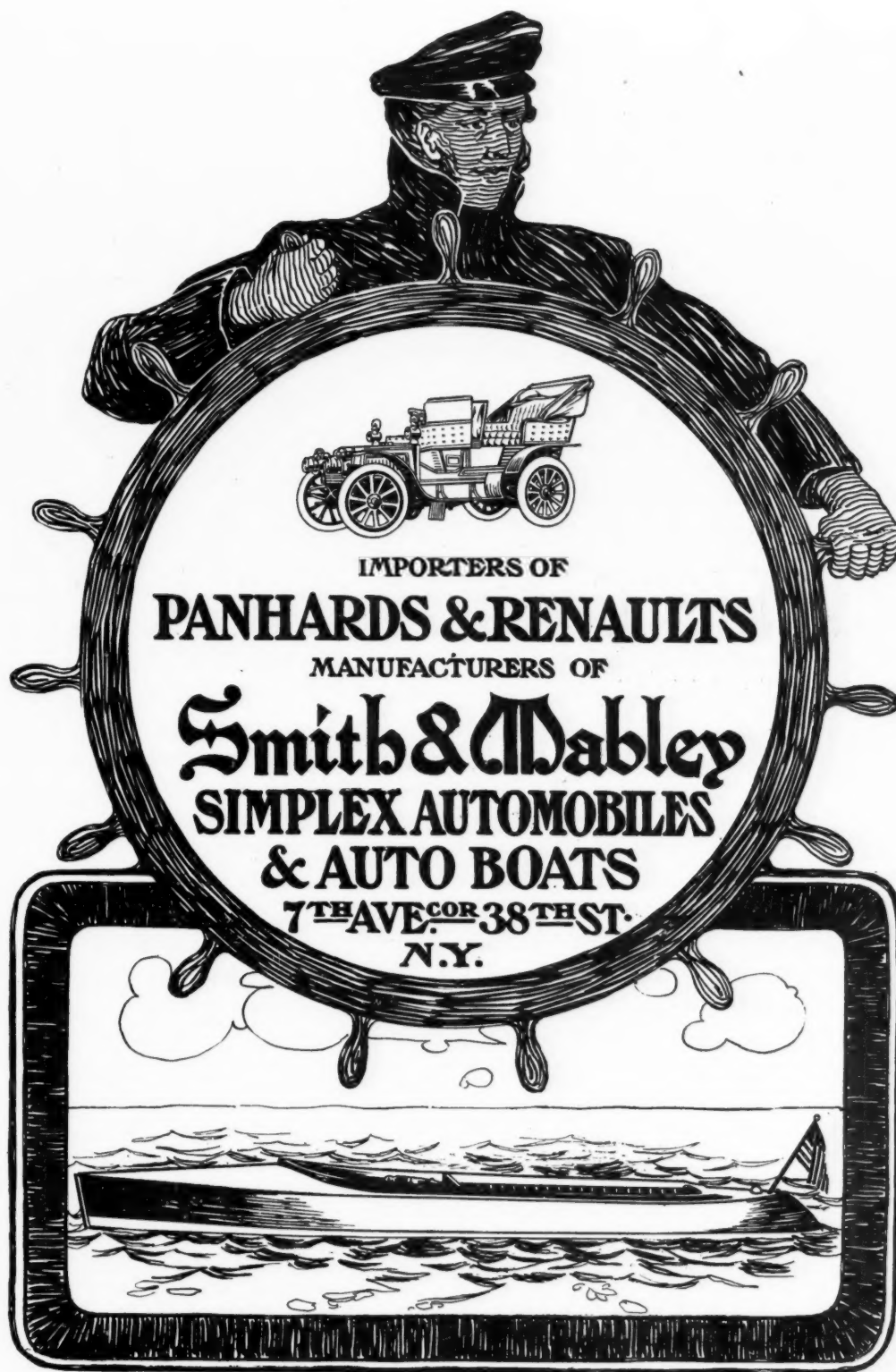
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Euclid and Lake View Aves.

**Cleveland, U. S. A.**

California Branch: A. P. WORTHINGTON, 331-333 So. Main St., Los Angeles





IMPORTERS OF  
**PANHARDS & RENAULTS**  
MANUFACTURERS OF  
**Smith & Mabley**  
**SIMPLEX AUTOMOBILES**  
**& AUTO BOATS**  
7<sup>TH</sup> AVE. COR 38<sup>TH</sup> ST.  
N.Y.

The illustration features a captain in a dark uniform and cap, firmly gripping a large ship's steering wheel. The wheel is the central focus, with a vintage open-top car positioned in the upper half of its circular frame. Below the car, the text 'IMPORTERS OF' is written in a small, sans-serif font, followed by 'PANHARDS & RENAULTS' in a large, bold, serif font. Below this, 'MANUFACTURERS OF' is written in a small font, followed by 'Smith & Mabley' in a large, stylized, gothic-style font. Underneath, 'SIMPLEX AUTOMOBILES' and '& AUTO BOATS' are written in bold, serif fonts. At the bottom of the wheel's frame, the address '7<sup>TH</sup> AVE. COR 38<sup>TH</sup> ST. N.Y.' is printed in a small, sans-serif font. The lower portion of the wheel's frame contains a rectangular inset showing a motorboat on a body of water with a small flag at the stern. The entire advertisement is enclosed in a double-line rectangular border.



## JUST COMPARE

the specifications of the Model "L" with those of the high priced cars; then have a demonstration at our Branches, or one of our selling agents, and you will admit that the

*Rambler*

is equal to the best and at about one-half the usual price.

The Model "L" at \$1350 is equipped with a two-cylinder (5"x6") opposed engine, giving 16 horsepower at medium speed, with a range of 3 to 40 miles per hour. Has 84-inch wheel base, wheel steering, one lever control, automatic governor and carbureter, 30-inch wheels and 3½-inch heavy tires, French type of bonnet with honey-comb radiator, roomy tonneau with canopy top and side curtains; 2 brass side oil lamps, tail light, and a large gas headlight; brass tube horn, and a full outfit of tools, oil cans, etc., and needs only gasoline to be ready for immediate use.

Write for our illustrated catalogue, which describes each model in detail. Also for "A Little History" which accounts for some of the doings of our stock carriages.

---

**THOMAS B. JEFFERY & COMPANY**  
**KENOSHA, WISCONSIN**

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Branch Houses:—145 Columbus Avenue, Boston, Mass. 304 Wabash Avenue, Chicago, Ill.  
 Sales Agencies in all Principal Cities



# Decauville

## A CHICAGO AGENCY FOR THE DECAUVILLE

would be valuable because the Decauville represents the most marked advance in automobile construction.

The Decauville cars are built by the Societe Decauville, the famous locomotive builders and one of the largest engineering firms in France.

The steel pan which supports and protects the entire mechanism from mud, water and dust, makes the Decauville the most desirable car in the world for American roads.

Through the success of the Decauville on the track, liberal advertising

and the many satisfied users, it is the best known French car in the United States.

Further, we guarantee the Decauville for three hundred and sixty-five days, and the guarantee is unlimited relative to both workmanship and material

If you desire the Chicago agency and can satisfy us of your ability to properly represent the Decauville, write us.

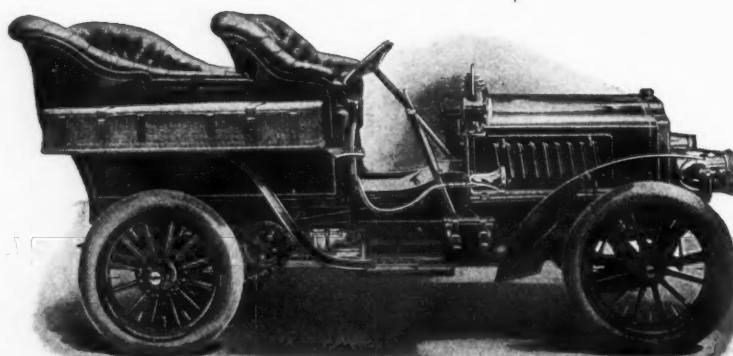
STANDARD AUTOMOBILE  
CO. OF NEW YORK,  
Sole American Agent

136 West 38th Street  
New York

Licensed Importers under Selden Patent

# Columbia

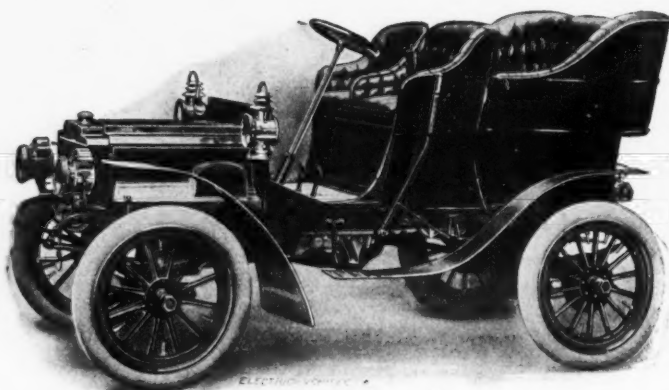
MARK XLII  
TOURING  
CAR



30-35  
HORSEPOWER  
HONEST RATING

This car introduces important new features suggested by a year's experience and perpetuates the best points of the COLUMBIA MARK XLI of Chicago-New York Record and Endurance Run fame. MARK XLII has a 106-inch wheel base and pressed steel frame with the chassis entirely independent of the body. The four-cylinder engine, nominally rated at 30 h. p., but having developed 35 h. p. in actual tests, has mechanically operated inlet and exhaust valves and exclusive improvements in the spark-timing, lubricating and controlling devices. The material of the entire car is so distributed as to give the maximum of strength with the minimum of weight, making it the lightest car of equal power ever built for touring. Price, with standard tonneau body, \$4,000. Canopy top, \$300 extra. Special prices for Aluminum, Limousine or Surrey bodies.

MARK XLIII  
LIGHT  
TONNEAU



12-14  
HORSEPOWER  
HONEST RATING

MARK XLIII has a two-cylinder opposed engine forward in a removable bonnet, bevel gear rear axle drive, sliding gear transmission with three speeds forward and one backward, direct drive on the high gear, and a foot operated friction clutch which is self-compensating for wear. The machine can be run at a speed of thirty miles per hour on the level and is a first class hill climber on the high gear. Lubrication is automatic. The carbureter permits use of kerosene in emergencies. Entirely new features in the control system make this the easiest of all gasoline cars to operate. The body is noticeable for its exceedingly handsome lines and convenient disposition of seat room. The tonneau seats are of full carriage size. All materials and workmanship are of the very best and the car is of the highest grade in every detail, great or small. Canopy top, \$200 extra.

A Catalogue of Columbia Gasoline Cars and Electric Pleasure Vehicles will be sent on request; also separate Catalogues of Electric Town Carriages of the coach class and Commercial Vehicles.

**ELECTRIC VEHICLE CO., Hartford, Conn.**

New York Branch: 134-130-138 W. 39th St.

Chicago Branch: 1413 Michigan Ave.

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Member Association of Licensed Automobile Manufacturers.



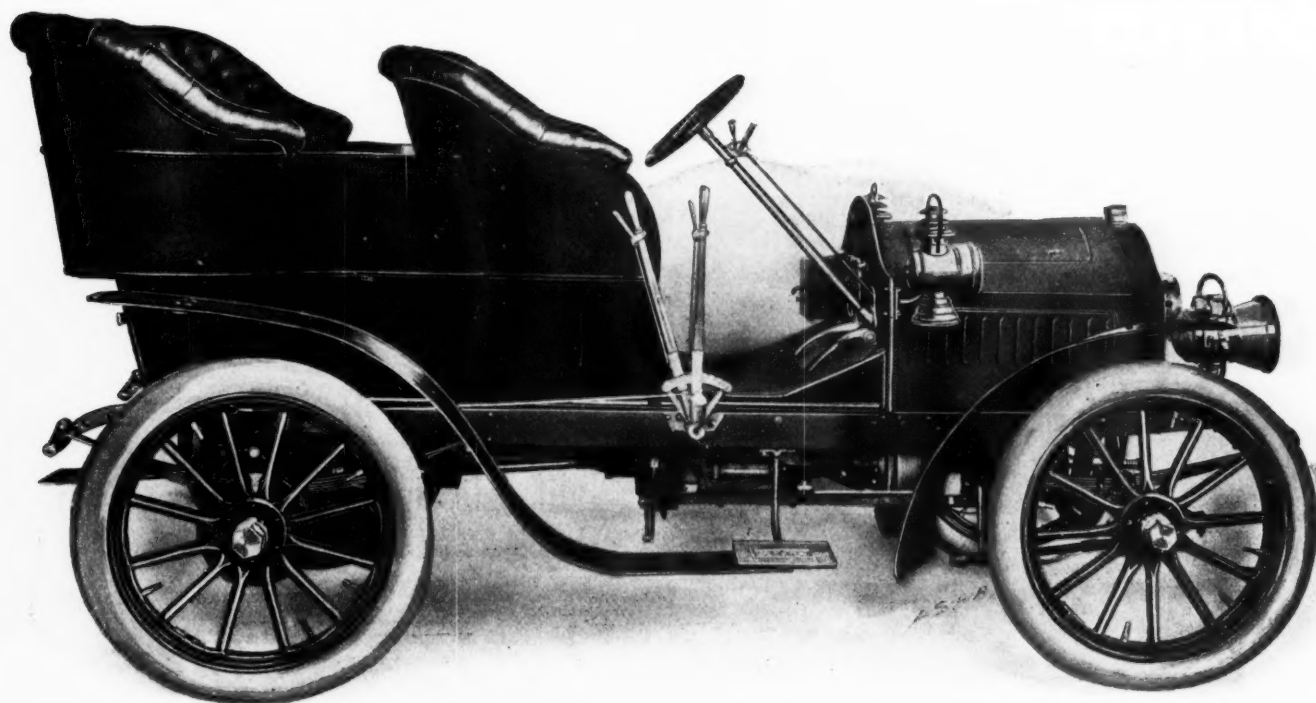
WHY BUY A FOUR-CYLINDER CAR

Unless You Desire Extraordinary Speed

# THE ROYAL TOURIST

MODEL "O"

Will do 35 miles per hour and is a wonderful hill climber



**\$2,300**

Reliability, Comfort, Appearance,  
18 Horsepower, Direct Drive,  
Aluminum Bodies, Complete Equipment,  
10-Day Deliveries

**THE ROYAL MOTOR CAR CO.**

CLEVELAND, OHIO

# TWO NEW AUTOMOBILE TIRES

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*The  
Instantaneously  
Detachable*  
**DUNLOP**

AND

*The*  
**HARTFORD  
CLINCHER**

Introducing an entirely new departure in rim construction. ∴ Its detachable side flanges or beads are removed by the simple loosening of a screw, leaving a flat faced rim, from which the tire can be removed "like slipping a belt off a pulley"—a loose belt at that,

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made under the G & J patents. This tire combines all the excellent qualities of that construction with many improved features of its own, hitherto characteristic only of **the foreign** makes

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**THE HARTFORD RUBBER WORKS CO.**

**HARTFORD,**

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# NOTICE

USERS, AGENTS, IMPORTERS, DEALERS AND  
MANUFACTURERS OF

## Gasoline Automobiles

United States Letters Patent No. 549,160, granted to George B. Selden, November 5, 1895, controls broadly all gasoline automobiles which are accepted as commercially practical. Licenses under this patent have been secured from the owners by the following named:—

### MANUFACTURERS

Electric Vehicle Co.	The J. Stevens Arms & Tool Co.
The Winton Motor Carriage Co.	H. H. Franklin Mfg. Co.
Packard Motor Car Co.	Smith & Mabley, Inc.
Olds Motor Works	The Commercial Motor Co.
Knox Automobile Co.	Berg Automobile Co.
The Haynes-Apperson Co.	Cadillac Automobile Co.
The Autocar Co.	Northern Mfg. Co.
The George N. Pierce Co.	Pope-Robinson Co.
Apperson Bros. Automobile Co.	The Kirk Mfg. Co.
Locomobile Co. of America	Elmore Mfg. Co.
The Peerless Motor Car Co.	E. R. Thomas Motor Co.
Standard Motor Construction Co.	Buffalo Gasoline Motor Co.
Waltham Manufacturing Co.	Pope Manufacturing Co.
Pope Motor Car Co.	The F. B. Stearns Co.
	The Sandusky Automobile Co.
	Crest Manufacturing Co.

### IMPORTERS

Smith & Mabley, Inc.	Standard Automobile Co.
Central Automobile Co.	E. B. Gallaher
Alexander Fischer.	Auto Import Co.
Hollander & Tangeman	American Darracq Automobile Co.
Sidney B. Bowman Automobile Co.	Controlled by F. A. La Roche Co.

These manufacturers are pioneers in this industry and have commercialized the gasoline vehicle by many years of development and at great cost. They are the owners of upwards of four hundred United States Patents, covering many of the most important improvements and details of manufacture. Both the basic Selden patent and all other patents owned as aforesaid will be enforced against all infringers.

No other manufacturers or importers than the above are authorized to make or sell gasoline automobiles, and any person making, selling or using such machines made or sold by any unlicensed manufacturer will be liable to prosecution for infringement.

A suit was commenced on Oct. 22d against a dealer, and against a manufacturer infringing United States Letters Patent No. 549,160.

A suit was commenced Nov. 5th, against a purchaser and user of an automobile infringing the same patent.

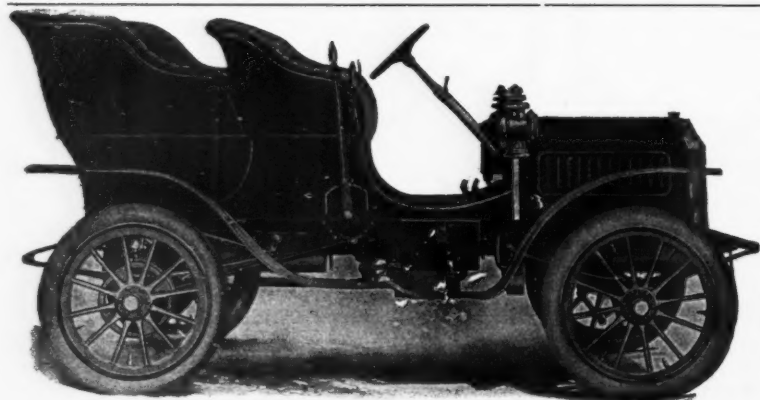
A suit was commenced December 28th, 1903, against an importer of automobiles infringing the same patent.

---

Association of Licensed Automobile Mfrs.  
No. 7 EAST 42d STREET, NEW YORK

# The National Line for 1904

CONSISTS OF 14 MODELS



"THEY  
GO  
THE  
ROUTE"



## 12 Electrics and

Runabouts  
Road Wagons  
Stanhopes  
Electrobiles  
Traps, Etc.

Edison, Western or  
Exide Batteries

## 2 Gasoline Touring Cars

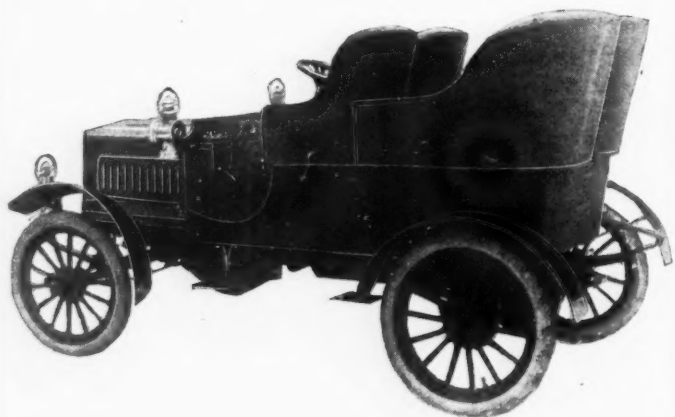
Four Cylinders  
Pressed Steel Frame  
Bevel Gear Drive  
and many other up-to-date features

## This Line

is a most desirable addition to any dealer's stock. Catalogue and circulars descriptive of our entire line now ready.

Write us now. We want live representatives in unoccupied territory.

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INDIANAPOLIS, IND.**



## THE *Bates* *Family Car*

16 HORSEPOWER

Car Built on Best Mechanical Principle.

Durability and Simplicity our Strongest Points.

Vertical two-cylinder motor. Bevel drive. Direct connection on high speed. One lever control. Side entrance to tonneau. Dust proof locker under rear seats. Front seat divided. Commutator on wind board. All parts easily accessible.

# BATES AUTOMOBILE CO.

LANSING, MICHIGAN



# FEW REALIZE

HOW VITAL A POINT IN MOTOR CONSTRUCTION IS THE

# REAR AXLE



The PEERLESS rear axle is arched—strongest known construction—no weight on any moving part—ball bearing throughout. The new catalogue tells the other points of PEERLESS Perfection. Write for it.

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Member Association Licensed Automobile Manufacturers

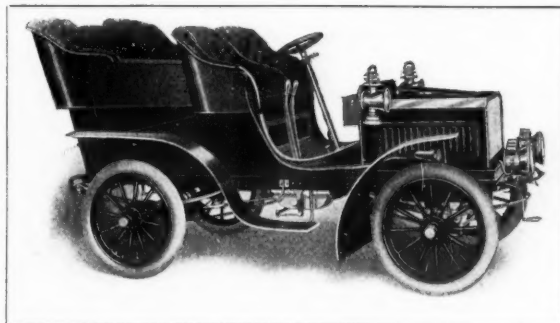
**TWENTY  
HORSEPOWER**

**THE**

**PRICE  
\$2,000.00**

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THE MOST POWERFUL FOUR-  
CYLINDER AIR-COOLED CAR  
EVER BUILT. :: :: :: ::



AND WE GUARANTEE IT TO  
KEEP COOL UNDER THE MOST  
SEVERE TESTS. :: :: :: ::

WRITE US AND WE WILL TELL YOU MORE ABOUT IT.

BUILT BY THE

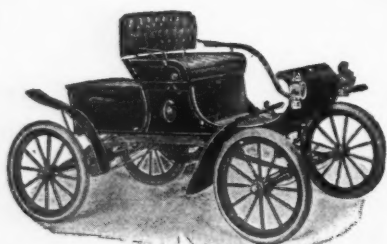
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**WEIGHT  
1,800**

**COLUMBUS, OHIO.**

AGENTS WANTED.

**FOUR  
SPEEDS**



Price \$650.00

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THEM  
WHEREVER  
YOU GO



THEY GO  
WHEREVER  
YOU SEE  
THEM



Price \$850.00

# The OLDSMOBILE

## STANDARD RUNABOUT

The test of use has demonstrated the quality of this pioneer Runabout. In all lands and climes, the name "Oldsmobile" is a synonym for the best and latest in automobiles. Everywhere it is recognized as "the best thing on wheels."

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The machine that "delivers the goods." This is true both figuratively and literally. Aggressive merchants have found it indispensable; it is always ready and is free from complications so that any intelligent man can operate it. It has a capacity of 500 lbs. weight in one cubic yard of space. It has a gasoline capacity for 100 miles without refilling.

Full information regarding the Oldsmobile line can be obtained from our sales agents, or will be sent direct.

**OLDS MOTOR WORKS, 1300 Jefferson Ave., Detroit, Mich., U. S. A.**

MEMBER OF THE ASSOCIATION OF LICENSED AUTOMOBILE MANUFACTURERS.

## "IMPERIAL" Gasoline Automobiles

DOUBLE OPPOSED  
AIR-COOLED MOTOR

ARE ALWAYS READY  
THE HOTTEST DAYS OF SUMMER  
THE COLDEST DAYS OF WINTER

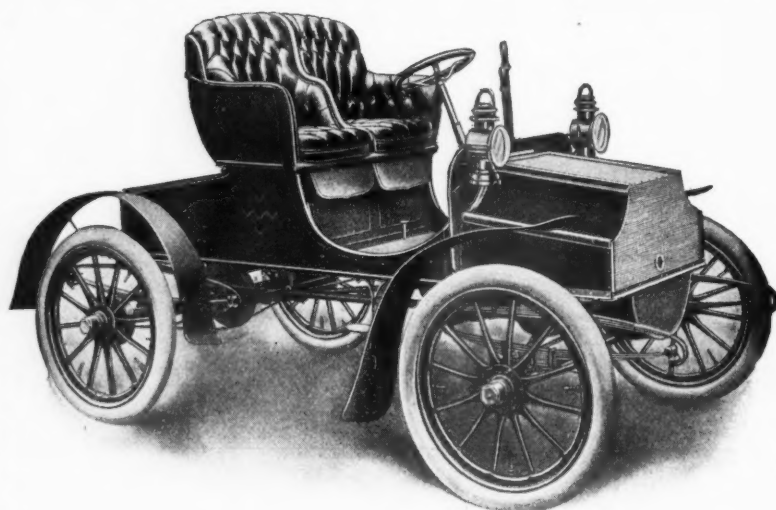
BEVEL GEAR DRIVE  
SLIDING GEAR TRANSMISSION

### WE MANUFACTURE 4 DIFFERENT MODELS

- Model A. Open Runabout
- Model B. Runabout Furnished with Falling Top or Doctor's Top
- Model C. Delivery Wagon
- Model D. Full Glass Doctor's Car

### HAS ALL THE LATEST IMPROVEMENTS

Our "IMPERIAL" Automobiles are driven by double opposed air-cooled engines (no water, no radiator coils, no pump), placed in front, away from all dirt and dust. All parts accessible by simply lifting the hood. Has bevel gear drive instead of sprocket chain. Sliding gear transmission. Two brakes. Automatic spark timer. Forced feed oiler of large capacity. Tilting steering wheel. Our spring suspension we claim is the most practical and best ever shown on any automobile. Body of handsome design, roomy and comfortable, and with ample room back of seat for carrying a number of parcels. Upholstered in the finest quality of leather.



IMPERIAL MODEL "A"

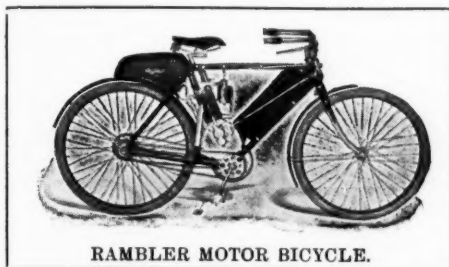
AGENTS WANTED IN UNOCCUPIED TERRITORY  
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## Rambler, Crescent, Monarch, Imperial Motor Bicycles, for 1904

Unique construction. Simple to operate. Safe, comfortable, speedy.



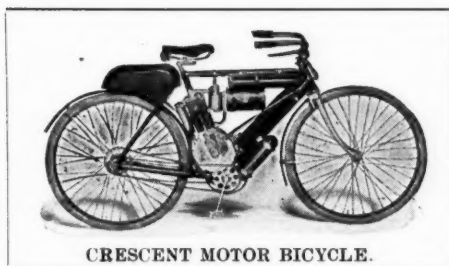
RAMBLER MOTOR BICYCLE.

**Pope  
Product**

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WESTERN DEPARTMENT  
CHICAGO, ILL.

**Pope  
Quality**



CRESCENT MOTOR BICYCLE.

4-cycle, high compression, jump spark motor, 1 3/4 H. P. with great reserve power.  
Absolute one lever control.  
Speed 5 to 30 miles per hour.  
No mechanical skill required.

**"JUST GET ON AND RIDE"**

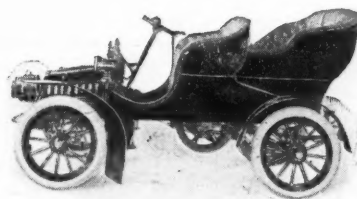
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Send for Illustrated Catalogue

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All the improved features of the expensive touring cars

Simple Construction  
Easy to Operate  
Ample Speed, Power  
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Model B. 10 H. P.  
Price \$1200  
Without Tonneau \$1050

Two new masterpieces added to the product of

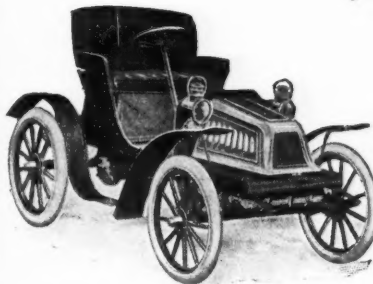
# POPE MANUFACTURING CO.

HARTFORD, CONN.

Modern Gasoline Cars at Moderate Prices.

A staunch and reliable  
car for all around  
service

## Pope Tribune



6 H. P. Price \$650

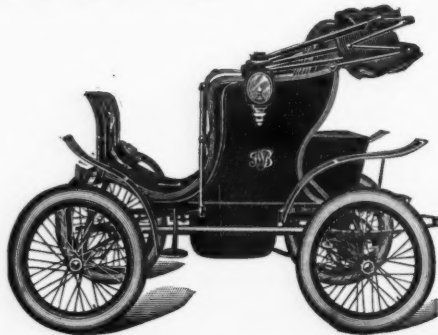
Complete and Comprehensive Catalogues for 1904 sent on request

### BRANCHES

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## CLASSIFICATION DISTINCTIVE ... WHY?

THE LIGHTEST  
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MOST DURABLE  
MOST EFFICIENT  
BEST FINISHED



ABSOLUTELY SAFE  
PERFECTLY CLEAN  
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TO KEEP

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Attractive in Rich Finish and Design. ✱ Simply Manipulated. ✱ Always Satisfactory.  
A Carriage Any Lady Can Drive.

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THE BAKER MOTOR VEHICLE CO., Cleveland, Ohio

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Shaft Drive

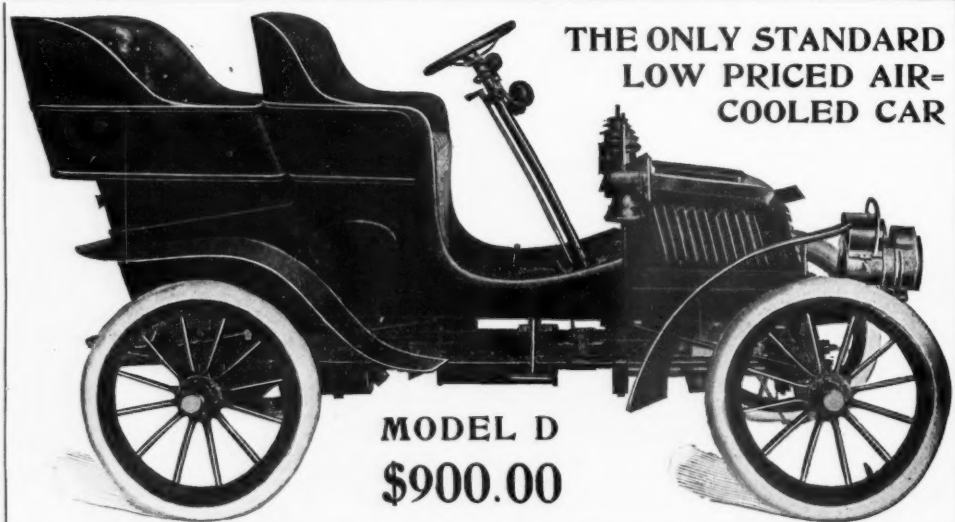
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Simplicity

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Luxurious Finish

Tried Reliability



THE ONLY STANDARD  
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\$900.00

The Crestmobile has won its own reputation by merit. It runs every day in the year, costs little to maintain, sells quickly and pleases users. The Crest-factory is large and can deliver promptly. Other Models \$650 to \$1250.

Member of the Association of Licensed Automobile Manufacturers

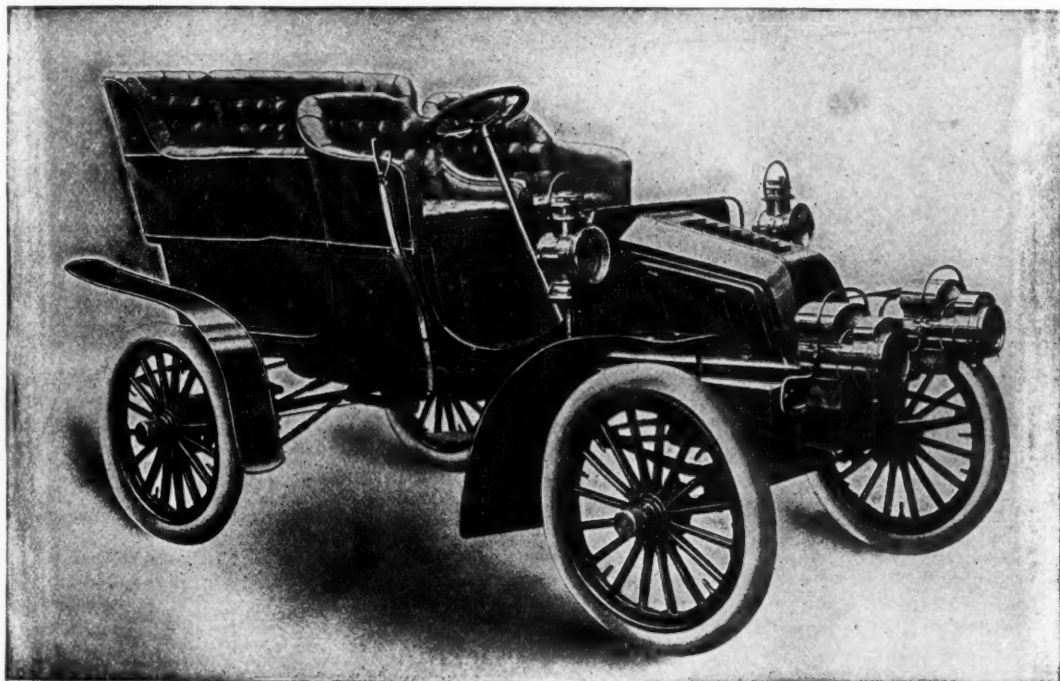
## CREST MFG. CO., Cambridge, Mass., U.S.A.



You Know This Car! It is the....  
Tried and True

# FREDONIA

which never failed in the severest tests of last season



WE

await your decision relative to our new 2-cylinder car, which constituted an interesting part of our Chicago Show Exhibit. WE think it is the "real thing" and are prepared to show

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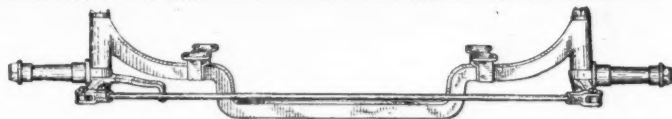
**Fredonia Mfg. Co.**

Youngstown, Ohio



CHICAGO AGENT:

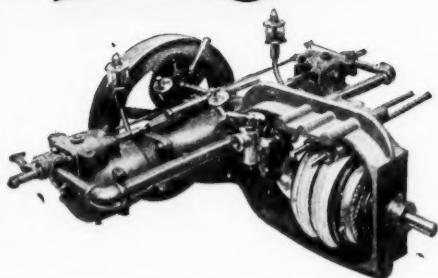
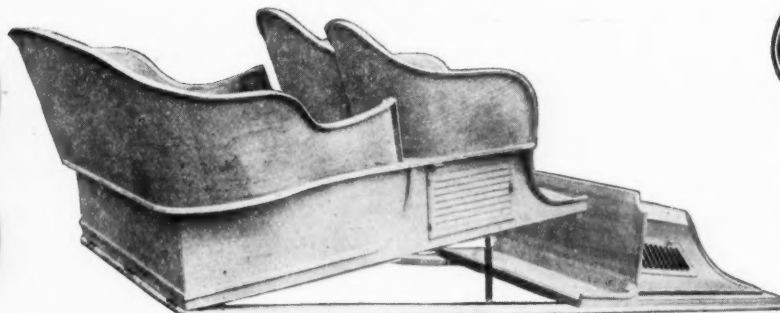
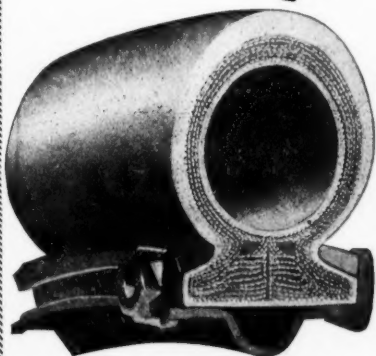
Western Automobile Co.,  
1303 Michigan Avenue.



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## The World's Fair

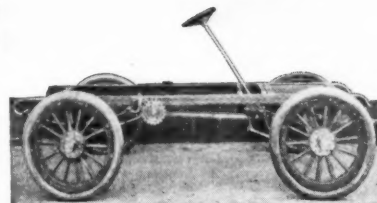
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We manufacture and sell all the parts for Automobiles. Our new prices will interest you.

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826 So. 18TH St. - - ST. LOUIS, MO.



*Our new catalogue is full of detailed information*

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## GASOLINE TOURING CAR



Equal to the best imported cars in material, workmanship, and finish, but better adapted to American conditions.

**A TRUE SIMPLEX**

**TWO** Cylinder and Four Cylinder Touring Cars, Front Vertical Motors used exclusively. Prices from \$2,000 upwards. Place your order early and avoid delay in delivery.

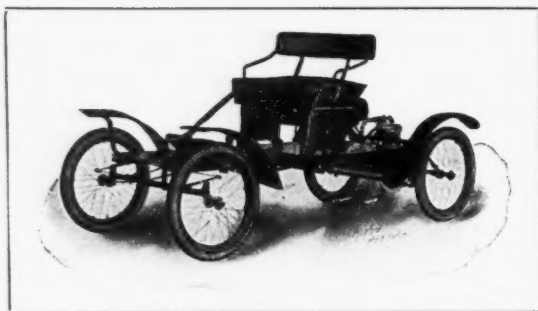
**The Locomobile Company of America, Bridgeport, Conn.**

BRANCHES: — NEW YORK, Broadway and 76th St.; PHILADELPHIA, 249 North Broad St.; CHICAGO, 1354 Michigan Ave.; BRIDGEPORT, Factory at Seaside Park; BOSTON, 15 Berkeley St.

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# 16 TO 1

While you are striving to sell one large touring car, don't you know that you could sell sixteen Orient Buckboards? And even after you have succeeded in selling the man



Patented March 10, 1903, Aug. 18 1903.

a large car, you ought to sell him a Buckboard also, so that he would have something to ride in while the other is out of order. When you sell a large car the purchaser usually feels that he has a mortgage on you for life, but Buckboards sell like bicycles, and seldom give you any further trouble. We are shipping Buckboards by the carload; don't wait and get left.

Write for catalogue and terms.

**Price \$425**

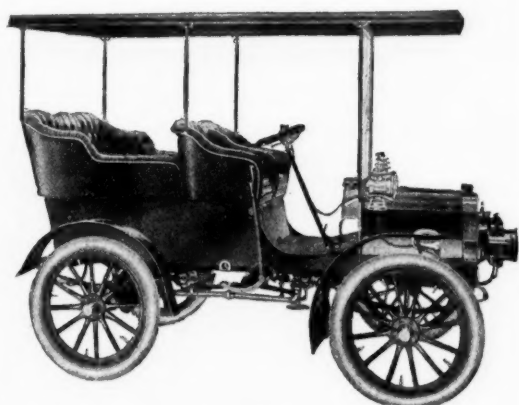
**WALTHAM MFG. CO., WALTHAM, MASS.**

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Are  
You  
With  
Us?

# COL. SPRAGUE'S \$100.00 CANOPY



A SPRAGUE CANOPY—CONCEALED CURTAINS

With Concealed Curtains—Weights About 65 lbs.  
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We also make a \$200 Canopy.  
We make park canopies for  
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covers (or three bow tops).

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## AUTOMOBILE PARTS

### PRESSED STEEL FRAMES

Made of cold rolled steel and supplied with or without forgings, assembled or as frame members. Send for descriptive circular.

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Front—tubular and forged, with steering pivots and cross connection; rear—chain or bevel gear drive, with ball, roller or plain bearings.

### STANDARD TRUCK PARTS

Including front axle, steering gear, suspension and transmission gear, hub and countershaft brakes, and electric motive power.

### OTHER PRODUCTS

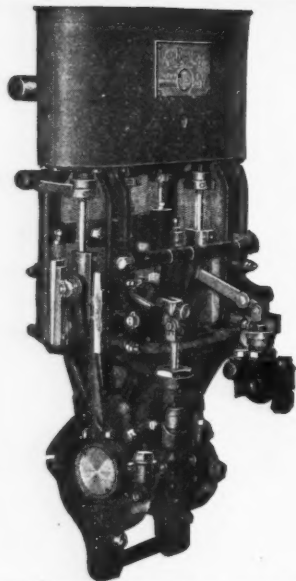
We also make "Diamond" chains, "High Duty" steel balls, change and transmission gears, pressed steel and malleable hubs, engine cranks and mufflers.

CATALOG NO. 1 DESCRIBES LIGHT PARTS

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FEDERAL MANUFACTURING COMPANY—CLEVELAND, OHIO

SELLING AGENT—HAYDEN EAMES, AMERICAN TRUST BLDG.—CLEVELAND



THE "NEW MASON" Model C

We do not  
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ready to back up our affirmation, that it is, from every standpoint,

# The "NEW MASON"

(Model "C")

includes all of the many excellencies of the original Mason Engine, with additional features, which give it a still greater lead ahead of all other steam auto engines.

Every part of the Mason Engine has been critically gone over, and wherever possible, improved, strengthened and perfected in every smallest detail.

We have made, operated and repaired more steam auto engines than any other concern, and have concentrated in the "Model C" all of the experience gained by this wide observation of all other engines.

**The Mason "Model C"** is a perfect engine, but do positively affirm, and are

## THE BEST AUTO ENGINE IN THE WORLD.

Our "Model C" catalogue will tell you all about this engine, and prove interesting to every autoist. It will be a pleasure to mail you a copy. Send postal card for it to-day.

A full line of parts for all Mason Engines will be found at 147 Queen Victoria St., London, England.

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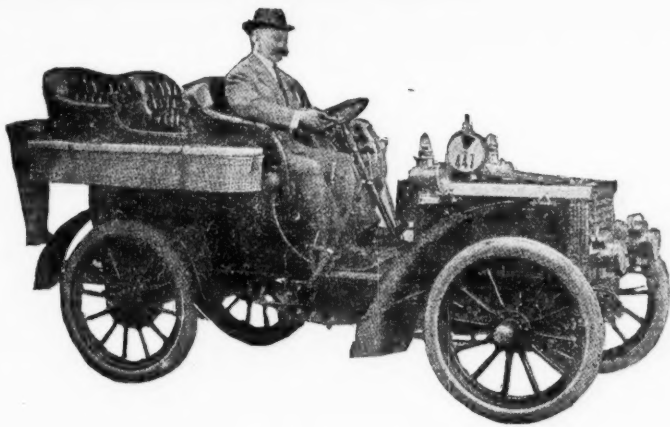
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The G. & J. Tire has quality in its construction and years of experience in detachable tire construction back of it.

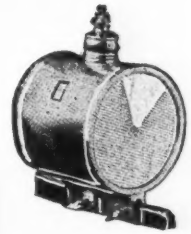
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**Indianapolis, Ind.**





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Accurately denotes the momentary speed of the automobile. It is a great invention and every owner of a motor car requires it. Made for models of all leading automobiles. The dial facing the operator shows the exact rate of speed. The side dials show black when car is going less than four miles per hour, then white up to ten miles, then green up to twenty miles, then red. The divisions are made to suit local ordinances. The public thus can see from either side of street day or night, whether ordinance is being violated, saving operator many an expensive law suit. When color flashes are not desired nor made compulsory, the ends of Indicator are blank and still the chauffeur reads by day or night the speed from dial facing him. Patented in U. S. and Europe. Adds more to appearance of car than most expensive lamp. A discount of 20 per cent will be allowed on all orders placed prior to May first next. Send for our booklet "HOW FAST." Address all communications to

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By a Designer worthy of the name who will make appointments for consultation or answer mail communications.

Only high-class trade wanted.

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All Materials  
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Coachmen's and Chauffeurs' Outfits a Specialty.  
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Discount to the trade.

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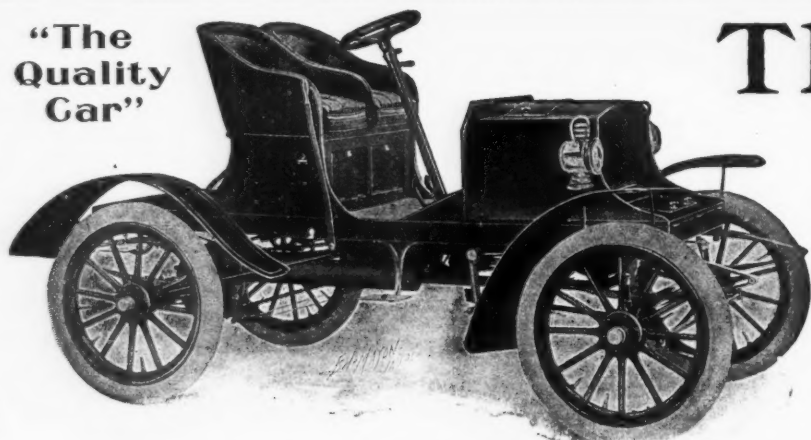
*"Harvey's"*

—TAILOR—

For nearly a century established as a tailor.

14 Jackson Blvd.  
CHICAGO.

"The  
Quality  
Car"



## The Premier

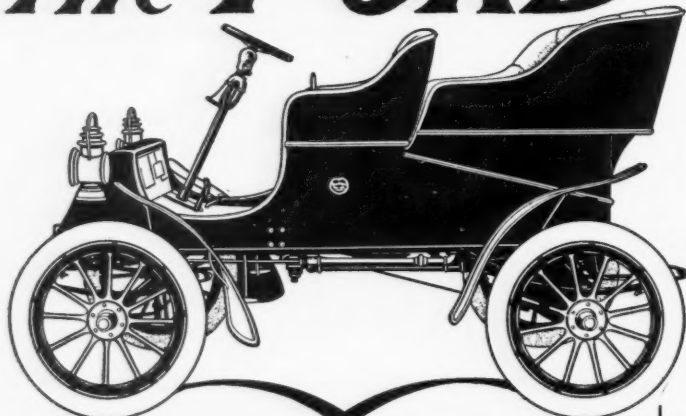
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IT'S not necessary to pay \$1500 to \$2500 for an Automobile simply because it is called a "Touring Car." The question is what kind of a machine will best suit your need. The Ford has proved by daily use that it is rightly named "The Car of Satisfaction." Actual service is the only test of a car's touring qualities. It's better to be able to **travel** in the Ford than to have an expensive so-called "touring car" that won't go.

Price with tonneau, \$900 | As a Runabout, \$800

We agree to assume all responsibility in any action the Trust may take regarding alleged infringement of the Selden Patent to prevent you from buying the Ford—"The Car of Satisfaction".

Write for illustrated catalogue and name of our nearest agent.  
FORD MOTOR CO. :: DETROIT, MICH.

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High  
Power



## TOURING CARS

Our twenty-four horsepower, two-cylinder opposed motor located under bonnet is the most powerful two-cylinder motor used on any car made. Easily as accessible as any four-cylinder motor. A large, roomy car for either four or six passengers. Early delivery for those ordering promptly.

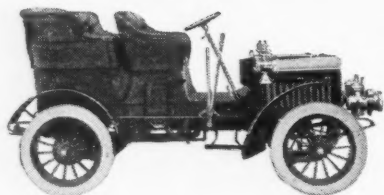
**The Best Car Built in America  
For the Average Man to Run**

Write for prices and deliveries

**Apperson Bros. Automobile Co., Kokomo, Indiana**

Licensed Under Selden Patent

CHICAGO BRANCH: 394 Wabash Avenue



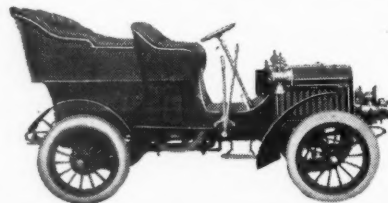
family car at a moderate figure. ¶ We expect you to see and inspect the Yale, but if you'll send for our book it will help you to appreciate this splendid car.

**THE KIRK MANUFACTURING CO.**

955 Oakwood Ave.

TOLEDO, OHIO

Members Association Licensed Automobile Manufacturers.





## "WHITE"

**SATISFACTION IS AN  
ESTABLISHED FACT**

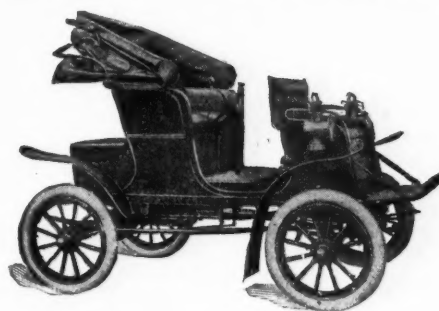
FROM all parts of the country come reports from satisfied owners telling of tours which they are making in White cars. The dominant note in all communications is complete satisfaction with the machine. Each owner of a White Touring Car seems eager to add his testimony to the reliability and simplicity of the mechanism and the consistent performance on all sorts of roads and in all kinds of weather. Therefore, it is with the greatest confidence that we offer this advice to all prospective buyers and to all those who are now driving gasoline machines (but have become dissatisfied with their behavior): "Ask the owners of White Touring Cars about them." We are quite certain that the longer they have ridden in them the more emphatic will be their commendation.

**White Sewing Machine Company**

CLEVELAND, OHIO

WRITE FOR WHITE BULLETIN NO. 2

## "STEVENS-DURYEA" Gasoline Automobile



**Individual Distinction** is written all over our gasoline machine. The fame of this automobile is rapidly growing, as the "**STEVENS-DURYEA**" embodies all desirable features that contribute toward the making of a superior vehicle. Price at factory, including complete equipment . . . . . **\$1300**

*Illustrated catalog, with detailed description, mailed on request. Write us for name of nearest agent.*

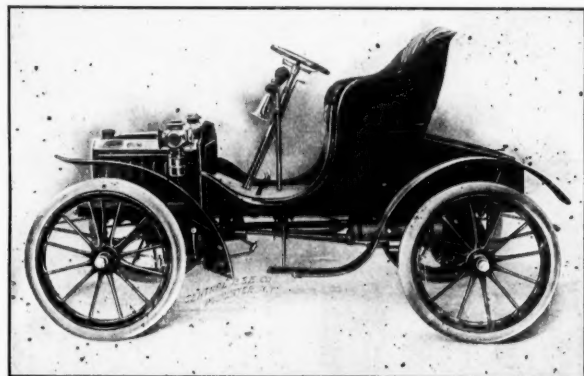
**J. STEVENS ARMS & TOOL CO.**

705 MAIN STREET  
CHICOPEE FALLS, MASS., U. S. A.

Member Association Licensed Automobile Manufacturers.

## "THE COVERT"

THE IDEAL LIGHT CAR FOR TOWN OR COUNTRY



Superior in Construction, Efficient Under All Conditions, Artistic in Design, Thoroughly Up-To-Date. Simplicity, Reliability, Lightness and Strength are combined in its makeup. Chainless Drive, Vertical Motor, Slide Gear Transmission, Cellular Cooler, and many more good features found in no other car at the price.

**Price, \$650**

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LOCKPORT, N. Y.



**If  
You Want  
a Car**

So simple a child can run it  
So strong it will stand any kind of usage  
So powerful it will climb any hill  
So comfortable you can ride in it all day without being tired  
So well built it will stay out of the repair shop

**Get the Dawson** **PRICE \$1,500**

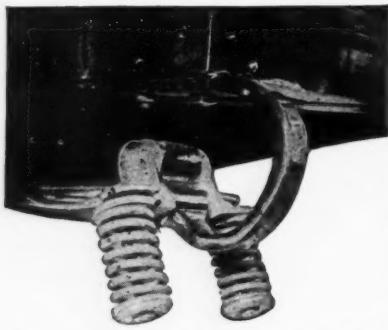
16 B. H. P., two-cylinder upright motor, spur gear and positive clutch transmission, chain drive—no side levers, long wheel base—seats as roomy and comfortable as a Davenport, high grade, honest work and material, superb finish.

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**Would  
You?  
Would  
I?**



Oakland, Cal., 27th Oct., 1903.

The Graham Co.,  
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Dear Sirs: I notice your "ad" of the GRAHAM Supplementary Spiral Springs, and as I am tired of paying for broken leaf springs for my touring car I will try your springs which you will ship to me by Wells-Fargo, C.O.D., with full instructions to apply the same.

Yours truly,

This is the regular thing by every mail.

**WOULD I?**

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41 Columbus Ave., BOSTON, MASS., U. S. A.

Let us tell more  
about the  
**Elmore**  
WITH  
TONNEAU



**\$850.00**

**Y**OU can't judge the Elmore at \$850.00 by any other car, for the very excellent reason that there's no other car quite like it in America. In rich luxuriousness; in grace and beauty of appearance; in economized energy; in capacity for covering rough roads and climbing steep hills; it is distinctly in a class by itself.

We make these statements thus strong merely to induce you to investigate and let us tell more about the Elmore and we are satisfied that you will become a buyer if you are interested at all in automobiles.

Let us point out the difference in power saved, between the Elmore one-cylinder two-cycle engine and the two-cylinder four-cycle engine of any other type and like capacity. Let us send you our 1904 illustrated catalogue; and the intensely interesting little book called "A Long Jump and Two Short Steps," which contains information unlike any other automobile book published—information no prospective buyer can afford to overlook.

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Members of the Association of Licensed Automobile Manufacturers.

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## **ELECTRIC**

With Exide or Edison Battery

RUNABOUTS SURREYS DELIVERY WAGONS  
STANHOPE VICTORIAS AND TRUCKS

## **GASOLINE**

TOURING CAR—Light and Powerful

**"The Automobile with a Reputation Behind It"**

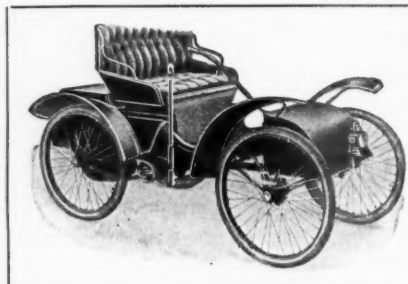
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**STUDEBAKER BROS. MFG. CO.**

Automobile  
Dept., SOUTH BEND, IND.

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DENVER, CO., cor. 15th & Blake Sts.  
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**"Ran it  
all winter  
through  
the  
snow"**

# **THE MICHIGAN**

"I want to say that I am satisfied with the Michigan and it has done for me all that you claimed it would. I have run it all winter through the snow and it is still running excellently and in a very good condition."—  
Mr. Jude T. Payne, Pawtucket, R. I., writes this, February 26, 1904.

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THE MOST SOUGHT AFTER  
THE MOST TALKED ABOUT  
HANDSOMEST, SIMPLEST  
MOST EFFICIENT  
BEST VALUE

For Catalogue and Special Information Address the Messrs.

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Members of Association of Licensed Automobile Manufacturers.

## THE CHAINLESS WOLVERINE

**A Live Proposition For Live Agents**

### A FEW OF ITS CHARACTERISTICS ARE

Bevel gear drive with sliding gear transmission, three speeds ahead and reverse.  
Speed range from 6 to 35 miles an hour.  
Long wheel base.  
Large, high back tonneau.  
Finest leather upholstery.  
Space under tonneau floor to carry extra tire, rain covers, etc.  
Brakes positive and operated by foot.  
Wheels wooden of heavy artillery pattern, and fitted with 30x3½-inch Diamond Tires.  
Ignition by jump spark, automatically controlled.  
Sight feed oiling device on dash; 500 miles on one oiling.  
Beautiful in appearance and handsomely finished.

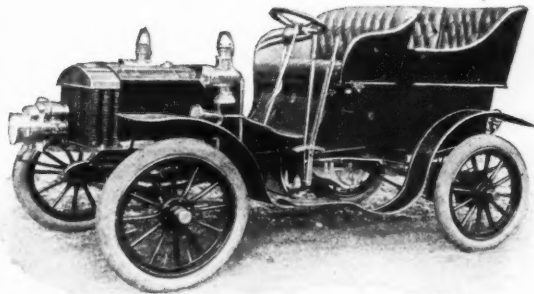


**PRICE \$1750**

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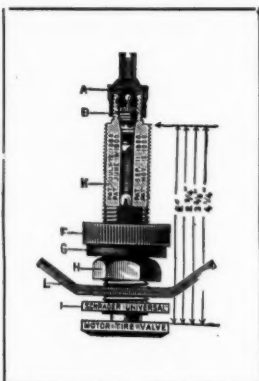


Do your touring in one of the St. Louis "Rigs that Run" and you don't need them. The St. Louis combines

**SIMPLICITY,  
ELEGANCE,  
DURABILITY**

What more do you want? We can give you anything from the Doctor's Favorite—our standard car—to the three cylinder, which beats them all. Write for catalog.

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TRADEMARK REGISTERED APRIL.

**Simple and Absolutely Air Tight**

Motor Tire Valves, as shown in cut, are made in four lengths as shown. Cut is exactly half size of the 2-inch valve. Supplied to the trade by all Tire Manufacturers.

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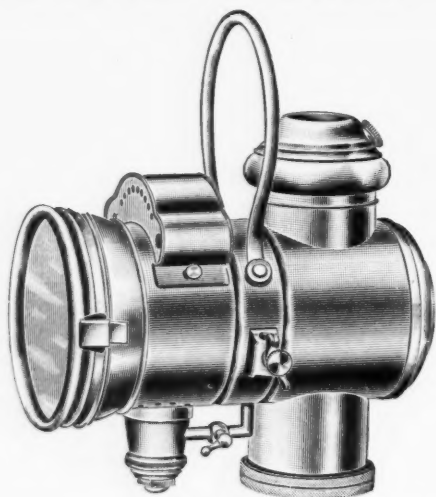
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WE FURNISH THE AUTOMOBILE MANUFACTURERS WITH COMPLETE FRONT AND REAR

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THAT ARE WELL KNOWN FOR WORKMANSHIP, DURABILITY AND EFFICIENCY

THE AMERICAN BALL BEARING CO., = = = Cleveland, Ohio



## Six Years of Experience

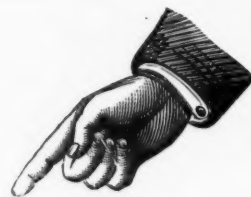
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Remember that we guarantee our goods.  
Many improvements for 1904.

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Lucifer  
Gas  
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As simple to use  
and operate as  
an oil lamp. Send  
for circular about  
it and our new  
styles of  
OIL LAMPS

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**R.E. Dietz Co.**  
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ESTABLISHED 1840

After you have tried other  
lamps and found them want-  
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**Richmond**  
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Lamps

They will suit you.



Richmond Lamps are bet-  
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they are made better—on bet-  
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light and wear longer.

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send it to you?

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Works Automatic

KEROSENE  
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No Boiler or  
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Special quotations  
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..OVERCOME TIRE TROUBLES..

Air Chambers  
Entirely Above Rim.

Simply  
Removing Bolts  
Allows Free Access  
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SIMPLICITY IS THE  
IMPORTANT FEATURE.

Mechanically  
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Quickly  
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necessary  
to remove  
Tire is a  
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Branches and Repair Depots:

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For Gasoline Automobiles.

#### The People Said:

"It always starts the motor, without using the  
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Write us what car you use, and  
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THE LAMP MAKER IS DOWN AND OUT.

LAMPS are all right simply as signals, but for fast running in the dark the  
**Rushmore Lens Mirror Searchlight** is a necessity.  
Our six-inch Lens Mirror Searchlight costing but \$16.35 with the new  
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worth (we mean cost) of reflector  
lamps. We make also 7-inch, 8-inch  
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for the big cars.  
For ten years the Rushmore Elec-  
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6-INCH SWING LIGHT FOR OLDS  
AND OTHER CARS.

**\$20.50**

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AGENTS IN PRINCIPAL CITIES.

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Want assurance that they are not buying an inferior type of motor, and we are in a position to give it. We can satisfy you. The

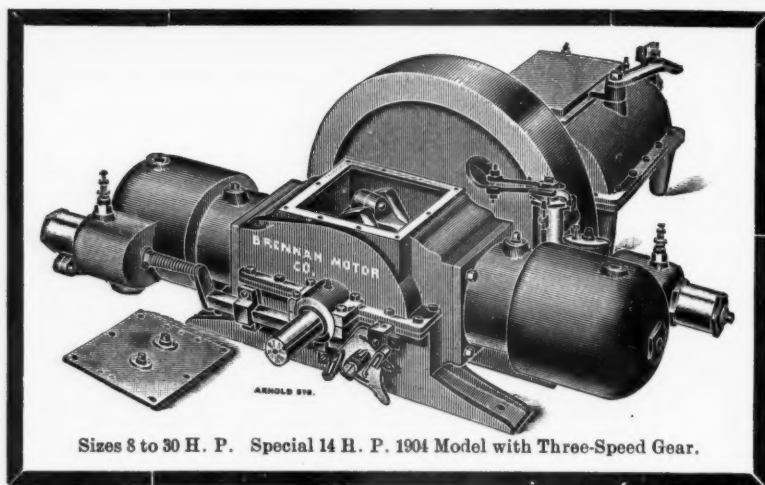
# BRENNAN

IS NOT AN EXPERIMENT

Have you had trouble with your motor? If so, it will pay you to write us.

The Brennan Standard Gasoline Motor is absolutely reliable when properly adjusted to an automobile and operated by anyone with average intelligence.

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Sizes 8 to 30 H. P. Special 14 H. P. 1904 Model with Three-Speed Gear.

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Single Chain Drive Transmission. Double Chain Drive Transmission. Center Shaft Drive Transmission.

It's a two-cycle; it's a success. One water inlet, one outlet, one fuel inlet, one exhaust.

*Automobile Motors from 8 H. P. to 24 H. P.*

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The price of rims is of no consequence. What they will do in the way of strengthening the car, improving its appearance and lessening tire troubles is the all

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Standard rims are the most economical because they're made so carefully, from such thoroughly adaptable materials. Every car of any prominence is fitted with them because auto manufacturers appreciate their superiority in every respect over other makes.

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No Excess Fare on any Train on  
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American Club Plan, from  
35c. to \$1.00. Also a la  
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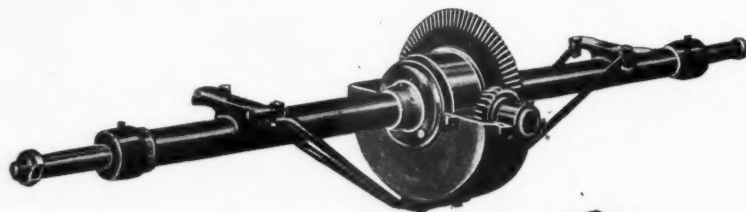
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**Sprocket  
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Bevel Gear  
Drive  
Automobile  
Rear Axles.**



## Russell Manufacturing Co.

INDIANAPOLIS, IND.



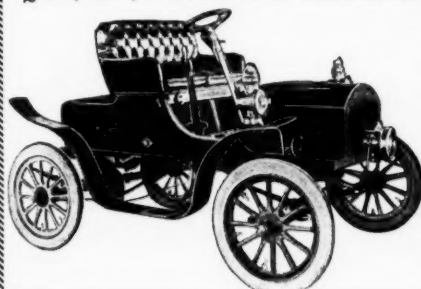
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Built for American Roads

Mud, Sand and Hills shrink before it. A model of simplicity. Quiet, Safe, Powerful and Economical. More power per pound than any other car on the market.



Cylinder 4 3/4 x 5 3/4. The only Runabout equipped with sliding Gear Transmission on the market to-day. Agents wanted. Write for prices and catalogue.

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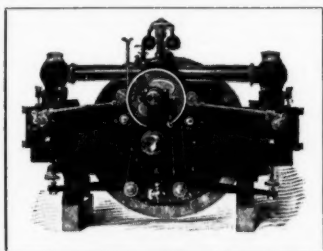
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YOU WANT THE BEST, OR  
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Electric apparatus for Auto-  
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A Catalogue for the  
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Double opposed cylinder, g-as  
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Perfectly balanced.

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Also 4 H. P. upright marine engine. Improved carbureters and  
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**SALISBURY  
IMPROVED  
ARTILLERY  
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Notice Ribs on Flanges.  
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The Makers of Gas Engines know

## The Apple

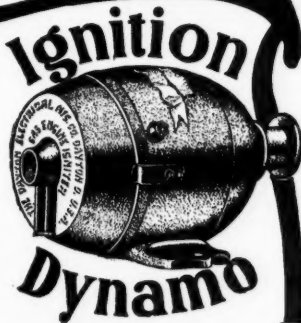
Is the most perfect and successful  
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The Fairbanks, Morse Co., Chicago,  
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**The Apple Ignition Dynamo**

Always reliable, attached in a moment  
to any automobile. No trouble starting  
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Neat in design. Dirt, dust and oil proof.  
Write today for particulars.

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is the above trade mark. It shows that we cut the gears  
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We make what you want as you want it, at prices  
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Stand the Test where all others are Knocked Out of Business. Every  
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**\$60.00**

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STORAGE, CHARGING, REPAIRING

SPECIAL BARGAINS IN

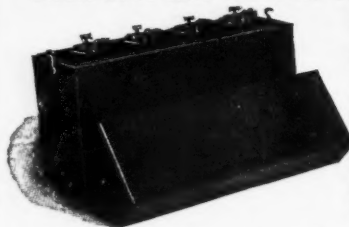
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Suitable for Toledo, Winton, Darracq and Cadillac machines. Also Coupes for lighter machines.  
Canopy tops of all kinds made to order.

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After trying the rest, try the

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We make all types and all sizes. Never had a coil break down. Our literature on jump spark ignition is interesting. Yours for the asking.

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Manufacturers of

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Solid, tilting and sliding Parts for running gears  
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*The Turner Vacuum System of Carburettion and Control combined with a positive Fuel Feed (not dependent on the flexible action of a float) constitutes the only Carburettion System with which the Hydro-Carbon Motor can or ever will be made reliable and perfect in its action.*

*100% Better Control  
More Power with less Fuel Consumption  
Absolute Reliability*

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During our extensive experience with the so-called soot-proof spark plugs, we have found that it is impossible to construct an absolutely soot-proof Plug, and with this idea in view we have constructed a plug that is as near soot-proof as possible to make, and one that can be cleaned, taken apart and replaced in a minute by simply removing one nut. We use no packing, cement or other useless articles, and our plug will hold compression better than any plug now on the market. All parts of the plug are allowed to expand.

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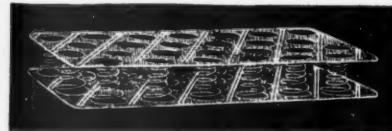
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Used by many of the leading manufacturers. Requires no frame, burlap or webbing. Will retain shape for years. Send for descriptive matter.

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More Power, Less Parts and No Vibration. Superbly Built, and of the Best Material.

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You Save

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worth of trouble by wiring up properly.

We send you a complete assortment of terminals with full instructions for 60 cts., postpaid.

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**DYNO** Dissolved in Gasoline will

**INCREASE THE POWER  
OF YOUR MOTOR  
5 to 15 PER CENT**

Sample and full directions, 25c.

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Generator for Electric Ignition.  
Guaranteed for One Year.

Double Opposed and Single Cylinder Motors,  
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Engines, Transmissions, Carburetors, Pumps, Lubricators, Steering Wheels, etc.

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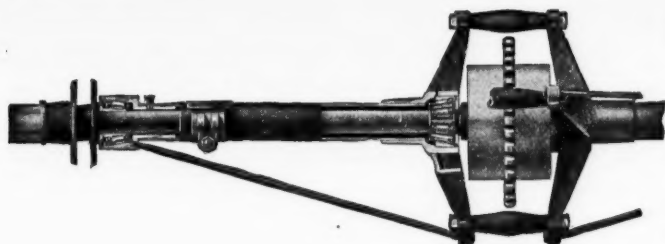
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USED FOR FINE VEHICLES

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Only Roller Bearing capable of taking up all wear.  
Warranted for two years.

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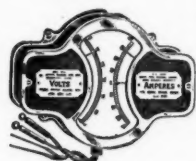
For every day you drive UNCOMFORTABLY, be it from COLD or WET, for after you have discovered the true worth and comfort of the

### Davis Arctic Over-Pants and Air-Tight Bag Lap-Robe

You'll kick yourself for not having ordered before

Price: Over-Pants \$10; without lining, \$6.00.  
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Combination Volt and Ammeter, Model R.

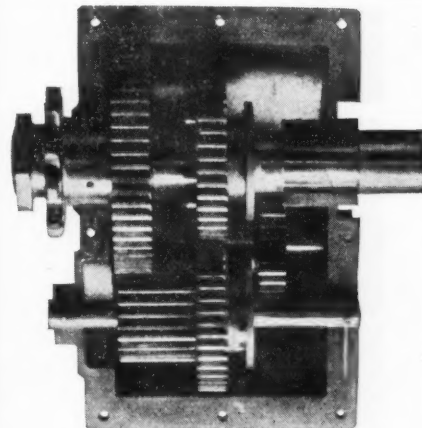
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FOR USE IN  
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Send for Catalogue.

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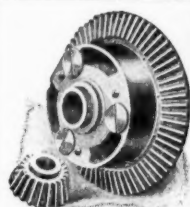


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Reliable  
Efficient  
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Noiseless

NO GEARS IN MESH ON HIGH SPEED

**Buckeye Motor Co.**  
COLUMBUS, OHIO



### Warner Differential Gears

All Sizes for Both Sprocket and Bevel Gear Drive. **Satisfaction or "No Pay"**

**WARNER "DOUBLE TILTING" STEERING WHEEL**

Send for Sample on Approval. Cat. Free.

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Electrically Welded

THE BEST STEEL  
BEST WORKMANSHIP  
Make the Best Rims



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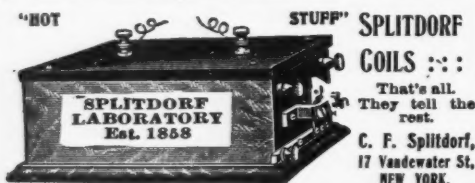
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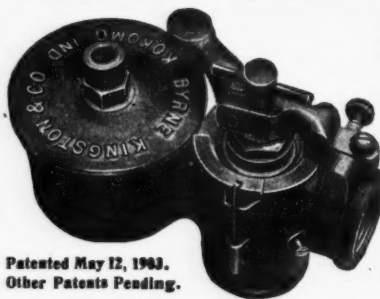
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Gives perfect control over motor and furnishes perfect and uniform mixture at all speeds. Throttle consists of fuel needle point valve and air regulating valve, both acting together by one lever.



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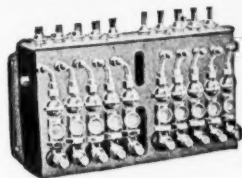


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WITH GENERATOR \$15.00  
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The reason is—because they stay right  
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Auto Jacks and Auto Clicks.

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Folding Auto and Car-  
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Remodeled and improved. To  
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for general battery testing, 0 to 15 am-  
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The contacts, on both cord and case, are  
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Particularly designed for Auto use.



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Any Voltage or Capacity  
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## Evinrude Motors

with 3 speeds and reverse, new type  
planetary gear. 7 H. P. single, 14  
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Prompt Deliveries, Prices Right.

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We furnish everything necessary to  
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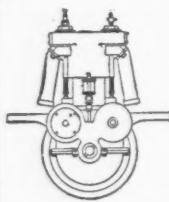
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**SECOND-HAND AUTOS.**

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Equal to the very latest French productions—Up-to-date Engines and Transmission Gears. Air-cooled and Water-cooled Motors. Air-cooled motors, 1 to 3 cylinders, 2 to 15 h. p. Water-cooled Motors, 2 to 8 cylinders 10 to 40 h. p.

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**DIXON'S PURE FLAKE GRAPH-ITE** is the one cylinder lubricant that works perfectly no matter how high compression, combustion and temperature are carried.

May we send you a sample for trial?

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IN

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**WANTED**—Oldsmobile repair man who can speak French, Spanish and German. Olds Motor Works, Detroit, Mich.

**WANTED**—Oldsmobile repair men and salesmen for our agencies. Olds Motor Works, Detroit, Mich.

**MALE HELP WANTED**—First-class automobile repair man with at least two years' experience. Steady position. Give references. H. E. Fredrickson, Omaha, Neb.

**FOR SALE**—We have a few used cars in first-class condition:  
Packard, Model "F," 1902.....\$1,150  
Packard, Model "F," 1903.....1,500  
Yale, 1903 Model.....1,100  
Centaur Electric Stanhope, New.....600  
Packard Surrey with Canopy Top.....1,500  
Pardee & Co., 1404 Michigan Ave., Chicago.

**FOR SALE**—New S-H. P. 1904 Pierce Stanhope. Seats four. Doctor's Victoria top and full equipment. Genuine bargain, \$1,150. Owner going abroad. E. H. Lemare, Carnegie Institute, Pittsburgh.

**FOR SALE**—Hoffman 10½-H. P. steam car, flash generator. Good as new, but will sell cheap. J. W. McCrea, 50 Glen Park place, Cleveland, O.

**FOR SALE**—Haynes-Apperson car in perfect running condition; carries two or four persons. Price \$700. I. X. L., Motor Age.

**FOR SALE**—New Buffalo Electric Stanhope, latest model; complete with new battery, any make. Price \$1,200. Address G., Motor Age.

**FOR SALE**—We have three Cadillacs which have been thoroughly overhauled and refinished finer than new; guaranteed as perfect throughout; \$650 with tonneau; light red finish. One in black with 30-inch Fisk detachable tires which cost \$100 extra. Nab one of these snaps at once. Michigan Automobile Co., Grand Rapids, Mich.

**FOR EXCHANGE**—Fine steam surrey built for four, folding front seat; cost \$1,400. Beautiful riding car. Will exchange for fine launch or bicycle stock. Michigan Automobile Co., Grand Rapids, Mich.

**FOR SALE**—Haynes-Apperson Standard; fine condition. Price \$700. A. C. Banker, 319 Michigan Ave., Chicago.

**FOR SALE**—Autocar Runabout; fine condition. Price \$500. D. W. C., Motor Age.

**FRENCH MACHINES**—Touring cars, delivery wagons and trucks, best makes, for sale; most favorable terms. Correspondence invited. R. M. Petard, Room 45, 35 South William St., N. Y. City.

**A BARGAIN**—1903 Columbia Electric Runabout. Mark XXXVIII, with hand buffed leather top, cost \$975.00. Exide battery, all in good shape; good carrying space under seat. Splendid rig for city physician. A genuine bargain at \$600.00. J. M. Hoogerhyde, 358 Bates St., Grand Rapids, Mich.

**FOR SALE**—One 1903 Winton touring car, equal to new, \$1,675.00; 6 Oldsmobiles, \$350 to \$525; one Orient buckboard, run 200 miles, \$250; one practically new steam outfit, \$100. Write for particulars. Earl Fisher, 328 E. Market St., Indianapolis, Ind.

**FOR SALE**—One new Fordmobile tonneau, \$700; one Model 7 Elmore, used 300 miles, \$490; one 1904 Michigan, new, \$360; one Rambler, second hand, fine condition, \$350; one 1904 Buckboard, new, \$375; one 1904 Buckboard, used 50 miles, \$360; one 1903 General, used 100 miles, improved and none better, \$750; one 2½ H. P. Thomas motor cycle, \$75. Address Auto, care Motor Age.

**SPLENDID BARGAINS**—1903 Winton touring car, 1903 Waterless Knox, 1902 Knox, 1902 Winton Phaeton, several Oldsmobiles and steam runabouts; two second hand electric runabouts. Write us fully regarding your wants, and we will try to give you an interesting proposition. Adams & Hart, Grand Rapids, Mich.

**FOR SALE**—Thomas Tonneau, Model 17, practically new. First check for \$700 takes it. Address Frank Floding, Lorain, O.

**FOR SALE**—One Centaur electric runabout, new, with Exide batteries; one Woods electric runabout with buggy top, will sell cheap for cash or trade for gasoline runabouts. Northwestern Motor Vehicle Co., 112 So. 6th St., Minneapolis, Minn.

**FOR SALE**—1903 union, new last June, sold through no fault; want 1904 model. Address Peter Woll & Sons Feather Co., Philadelphia.

**WANTED**—Late model gasoline motors; good repair. A. L. Gould, Dealer, Mobile, Ala.

**POSITION**—Experienced young man desires automobile garage management. H. T. E., 338 West 56th St., New York.

**FOR SALE**—Yale, in good condition. Bought new October, '03. Run less than 250 miles. Will sell for less than half price. S. M. Cummins, 217 Main St., Elkhart, Ind.

**FOR SALE**—"Toledo" Steamer, model "B," with full leather top and curtains. Engine, boiler and tires in perfect condition. As good as new. Price \$250. Address Subscriber, care Motor Age.

**FOR SALE**—One Autocar, has not run to exceed 3,000 miles; equipment consists of an extra tire with tube, one extra tube, four extra spark plugs, one rear lamp, two spare solar gas lamps No. 2, one extra generator. Price \$1,200.00. Address "T.," care Motor Age.

**AUTO BUSES**—Three 16-passenger steam busses and two 9 H. P. delivery wagons. First class condition. Moderate prices. Easy terms. Write for particulars. Peoples Rapid Transit Co., Olneyville Square, Providence, R. I.

**FOR SALE**—Electric, with wood wheels, Diamond tires, good condition; Stanhope body. Running condition, \$300.00. W. G. Bowe, Marshalltown, Ia.

**FOR SALE**—Having discontinued the building of complete automobiles, we have for sale cheap a lot of bodies, axles, engine castings, etc. Send for list. Russell Mfg. Co., Indianapolis, Ind.

**FOR SALE**—Second hand steam, gasoline and electric automobiles. hTe largest variety under one roof in America. Send 5c in stamps for catalogue. Mississippi Valley Automobile Co., 3935-39 Olive St., St. Louis, Mo.

**WANTED**—To hear from parties who would be interested in the development and manufacture of a hydro-carbon engine as described in the issue of February 25, 1904. L. J. Goodrich, care of Motor Age.

IF you think of buying a CRESTMOBILE, get my experience. One for sale. F. H. Whittelsey, Hartford, Conn.

### FOR SALE

1903 Olds, late model, fine condition.....	\$ 425
1903 Olds, with leather top .....	425
Steam surrey, almost new .....	400
1902 Pierce motorette, with top; good order .....	400
1903 Apperson Bros. 6 passenger touring car, almost new; used not over 1,500 miles .....	2,000

E. P. Moriarty & Co., Kansas City, Mo.

## For Sale

6 1903 Wintons; 10 1903 Olds; White Steamer; Cadillacs; Thomas; Electrics; Peerless; Mobiles; Franklins; too many to list in this space. Write for our new February catalogues of 60 bargains.

### Fisher Automobile Co.

330 N. Illinois St., INDIANAPOLIS, IND.

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AUTOMOBILE-BODY  
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WITH YOUR NEW GASOLINE CAR.

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Rims branded in the channel with this copyrighted mark, have been inspected and pronounced perfect. We guarantee our tires only on rims so branded.

A tire may make or break automobile enthusiasm, so insist on a portion of your investment paying for good rubber in the tire end of the equipment. Any user of

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will gladly tell you about the added pleasure that this part of the outfit has afforded him.

**The B. F. GOODRICH COMP'Y**  
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SAN FRANCISCO: 392 Mission St.  
DETROIT: 80 E. Congress St.

CHICAGO: 141 Lake St.  
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¶ The record of one mile in 46 2-5 seconds, made by the four-cylinder Packard "Gray Wolf" at Daytona, Fla., Jan. 3, is the world's record on cars of the Voiture Legere class. ¶ In the Voiture Legere Model "L" 1904 Packard is presented the same type of mechanism as that used in the "Gray Wolf," and no motor car of its class equals it in speed possibilities, endurance powers, strength, reliability and luxuriousness of style and finish.

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